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

Form 10-K

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

For the fiscal year ended December 29, 2019

or

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

For the transition period from to

Commission file number: 001-35406

Illumina, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**33-0804655**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

200 Illumina Way, San Diego, CA 92122
(Address of principal executive offices) (Zip code)
Registrant's telephone number, including area code: **(858) 202-4500**

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value	ILMN	The NASDAQ Global Select 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 ☑ No ☐

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

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

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

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

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

(Do not check if a smaller reporting 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 13a of the Exchange Act. ☐

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

As of February 7, 2020, there were 147 million shares (excluding 47 million shares held in treasury) of the registrant's common stock outstanding. The aggregate market value of the common stock held by non-affiliates of the registrant as of June 30, 2019 (the last business day of the registrant's most recently completed second fiscal quarter), based on the closing price for the common stock on The NASDAQ Global Select Market on June 28, 2019 (the last trading day before June 30, 2019), was $48.2 billion. This amount excludes an aggregate of approximately 17 million shares of common stock held by officers and directors and each person known by the registrant to own 10% or more of the outstanding common stock. Exclusion of shares held by any person should not be construed to indicate that such person possesses the power, directly or indirectly, to direct or cause the direction of the management or policies of the registrant, or that the registrant is controlled by or under common control with such person.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for the 2020 annual meeting of stockholders are incorporated by reference into Items 10 through 14 of Part III of this Report

ILLUMINA, INC.

FORM 10-K

FOR THE FISCAL YEAR ENDED DECEMBER 29, 2019

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See "Form 10-K Cross-Reference Index" within Other Key Information for a cross-reference to the parts and items requirements of the Securities and Exchange Commission Annual Report on Form 10-K.

Special Note Regarding Forward-Looking Statements

This annual report on Form 10-K contains, and our officers and representatives may from time to time make, "forward-looking statements" within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by words such as: "anticipate," "intend," "plan," "goal," "seek," "believe," "project," "estimate," "expect," "strategy," "future," "likely," "may," "should," "will," or the negative of these terms, and similar references to future periods. Examples of forward-looking statements include, among others, statements we make regarding:

- our expectations as to our future financial performance, results of operations, or other operational results or metrics;
- our expectations regarding the launch of new products or services;
- the benefits that we expect will result from our business activities and certain transactions we have completed, such as product introductions, increased revenue, decreased expenses, and avoided expenses and expenditures;
- our expectations of the effect on our financial condition of claims, litigation, contingent liabilities, and governmental investigations, proceedings, and regulations;
- our strategies or expectations for product development, market position, financial results, and reserves; and
- other expectations, beliefs, plans, strategies, anticipated developments, and other matters that are not historical facts.

Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based only on our current beliefs, expectations, and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy, and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks, and changes in circumstances that are difficult to predict and many of which are outside of our control. Our actual results and financial condition may differ materially from those indicated in the forward-looking statements. Therefore, you should not rely on any of these forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in the forward-looking statements include, among others, the following:

- challenges inherent in developing, manufacturing, and launching new products and services, including expanding manufacturing operations and reliance on third-party suppliers for critical components;
- the timing and mix of customer orders among our products and services;
- the impact of recently launched or pre-announced products and services on existing products and services;
- our ability to develop and commercialize our instruments and consumables, to deploy new products, services, and applications, and to expand the markets for our technology platforms;
- our ability to manufacture robust instrumentation and consumables;
- our ability to identify and acquire technologies, and integrate them into our products or businesses successfully;
- our expectations and beliefs regarding prospects and growth for the business and its markets;
- the assumptions underlying our critical accounting policies and estimates;
- our assessments and estimates that determine our effective tax rate;

- our assessments and beliefs regarding the outcome of pending legal proceedings and any liability that we may incur as a result of those proceedings;
- uncertainty, or adverse economic and business conditions, including as a result of slowing or uncertain economic growth in the United States or worldwide; and
- other factors detailed in our filings with the SEC, including the risks, uncertainties, and assumptions described in Item 1A "Risk Factors" below, or in information disclosed in public conference calls, the date and time of which are released beforehand.

Any forward-looking statement made by us in this annual report on Form 10-K is based only on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation, and do not intend, to publicly update any forward-looking statement, whether written or oral, that may be made from time to time, or to review or confirm analysts' expectations, or to provide interim reports or updates on the progress of any current financial quarter, in each case whether as a result of new information, future developments, or otherwise.

Available Information

Our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports are available free of charge on our website, www.illumina.com. The information on our website is not incorporated by reference into this report. Such reports are made available as soon as reasonably practicable after filing with, or furnishing to, the SEC. The SEC also maintains an Internet site at www.sec.gov that contains reports, proxy and information statements, and other information regarding issuers that electronically file with the SEC. Copies of our annual report on Form 10-K will be made available, free of charge, upon written request.

Unless the context requires otherwise, references in this annual report on Form 10-K to "Illumina," the "Company," "we," "us," and "our" refer to Illumina, Inc. and its subsidiaries.

Our fiscal year is the 52 or 53 weeks ending the Sunday closest to December 31, with quarters of 13 or 14 weeks ending the Sunday closest to March 31, June 30, September 30, and December 31. References to 2019, 2018, and 2017 refer to fiscal years ended December 29, 2019, December 30, 2018, and December 31, 2017, respectively, all of which were 52 weeks.

BUSINESS & MARKET INFORMATION

BUSINESS OVERVIEW

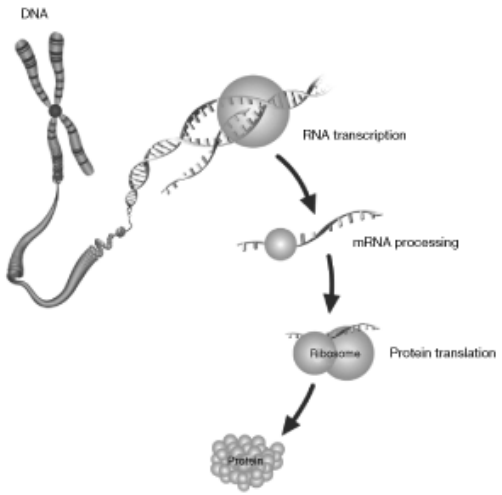
We are the global leader in sequencing- and array-based solutions for genetic and genomic analysis. Our products and services serve customers in a wide range of markets, enabling the adoption of genomic solutions in research and clinical settings. We were incorporated in California in April 1998 and reincorporated in Delaware in July 2000. Our principal executive offices are located at 5200 Illumina Way, San Diego, California 92122. Our telephone number is (858) 202-4500.

Our customers include leading genomic research centers, academic institutions, government laboratories, and hospitals, as well as pharmaceutical, biotechnology, commercial molecular diagnostic laboratories, and consumer genomics companies.

Our portfolio of integrated sequencing and microarray systems, consumables, and analysis tools is designed to accelerate and simplify genetic analysis. This portfolio addresses the range of genomic complexity, price points, and throughput, enabling customers to select the best solution for their research or clinical application.

Genetics Primer

The instruction set for all living cells is encoded in deoxyribonucleic acid, or DNA. The complete set of DNA for any organism is referred to as its genome. DNA contains small regions called genes, which comprise a string of nucleotide bases labeled A, C, G, and T, representing adenine, cytosine, guanine, and thymine, respectively. These nucleotide bases occur in a precise order known as the DNA sequence. When a gene is “expressed,” a copy of a portion of its DNA sequence called messenger RNA (mRNA) is used as a template to direct the synthesis of a particular protein. Proteins, in turn, direct all cellular function. The illustration below is a simplified gene expression schematic.



Variations among organisms are due, in large part, to differences in their DNA sequences. Changes can result from insertions, deletions, inversions, translocations, or duplications of nucleotide bases. These changes may result in certain genes becoming overexpressed (excessive protein production), underexpressed (reduced protein production), or silenced altogether, sometimes triggering changes in cellular function. The most common form of variation in humans is called a single nucleotide polymorphism (SNP), which is a base change in a single position in a DNA sequence. Another type of variation, copy number variations (CNVs), occur when there are fewer or more copies of certain genes, segments of a gene, or stretches of DNA.

In humans, genetic variation accounts for many of the physical differences we see (e.g., height, hair, eye color, etc.). Genetic variations also can have medical consequences affecting disease susceptibility, including predisposition to complex genetic diseases such as cancer, diabetes, cardiovascular disease, and Alzheimer’s disease. They can affect individuals’ response to certain drug treatments, causing them to respond well, experience adverse side effects, or not respond at all.

Scientists are studying these variations and their consequences in humans, as well as in a broad range of animals, plants, and microorganisms. Such research takes place in government, university, pharmaceutical, biotechnology, and agrigenomics laboratories around the world, where scientists expand our knowledge of the biological functions essential for life. Beginning at the genetic level, our tools are used to elucidate the relationship between gene sequence and biological processes. Researchers who investigate human and non-human genetic variation to understand the mechanisms of disease are enabling the development of more effective diagnostics and therapeutics. They also provide greater insight into genetic variation in plants (e.g., food and biofuel crops) and animals (e.g., livestock and domestic), enabling improvements in crop yields and animal breeding programs.

By empowering genetic analysis and facilitating a deeper understanding of genetic variation and function, our tools advance disease research, drug development, and the creation of molecular diagnostic tests. We believe that this will trigger a fundamental shift in the practice of medicine and health care, and that the increased emphasis on preventive and predictive molecular medicine will usher in the era of precision health care.

Our Principal Markets

We target the markets and customers outlined below.

Life Sciences

Historically, our core business has been in the life sciences research market. This includes laboratories associated with universities, research centers, and government institutions, along with biotechnology and pharmaceutical companies. Researchers at these institutions use our products and services for basic and translational research across a spectrum of scientific applications, including targeted, exome, and whole-genome sequencing; genetic variation; gene expression; epigenetics; and metagenomics. Next-generation sequencing (NGS) technologies are being adopted due to their ability to cost-effectively sequence large sample sizes quickly and accurately, generating vast amounts of high-quality data. Both private and public funding drive this research, along with global initiatives to characterize genetic variation.

Our products also serve various applied markets including consumer genomics and agrigenomics. For example, in consumer genomics, our customers use our technologies to provide personalized genetic data and analysis to individual consumers. In agrigenomics, government and corporate researchers use our products and services to explore the genetic and biological basis for productivity and nutritional constitution in crops and livestock. Researchers can identify natural and novel genomic variation and deploy genome-wide marker-based applications to accelerate breeding and production of healthier and higher-yielding crops and livestock.

Clinical Genomics

We are focused on enabling translational and clinical markets through the introduction of best-in-class sequencing technology. Further, we are developing sample-to-answer solutions to catalyze adoption in the clinical setting, including in reproductive and genetic health and oncology. In reproductive health, our primary focus is driving noninvasive prenatal testing (NIPT) adoption globally through our technology, which identifies fetal chromosomal abnormalities by analyzing cell-free DNA in maternal blood. Our NGS technology is also accelerating rare and undiagnosed disease research to discover the genetic causes of inherited disorders by assessing many genes simultaneously. Using NGS can reduce costs compared to traditional methods of disease diagnosis, which are often expensive and inconclusive while requiring extensive testing.

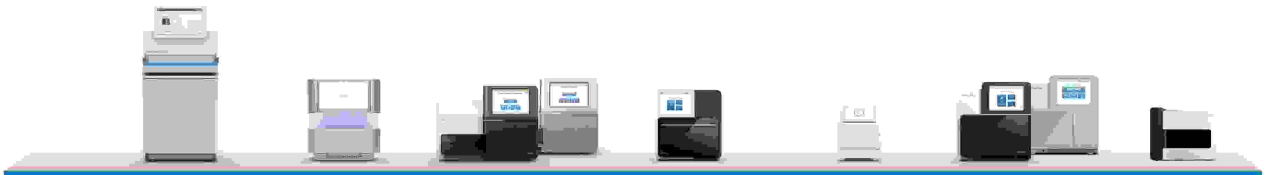
Cancer is a disease of the genome, and the goal of cancer genomics is to identify genomic changes that transform a normal cell into a cancerous one. Understanding these genomic changes will improve diagnostic accuracy, increase understanding of the prognosis, and enable oncologists to target therapies to individuals. Customers in the translational and clinical oncology markets use our products to perform research that may help identify individuals who are genetically predisposed to cancer and to identify molecular changes in a tumor. We believe that circulating tumor DNA (ctDNA) will become an important clinical tool for managing oncology patients during all stages of tumor progression. Our technology is being used to research the implications of ctDNA in treatment determination, treatment monitoring, minimal residual disease, and asymptomatic screening. For example, we have invested in, and partnered with GRAIL, which we formed to develop a blood-based test for early-stage cancer detection that is enabled by our sequencing technology.

Our Principal Products, Services, and Technologies

Our unique technology platforms support the scale of experimentation necessary for population-scale studies, genome-wide discovery, target selection, and validation studies (see Figure 1 below). Customers use our products to analyze the genome at all levels of complexity, from targeted panels to whole-genome sequencing. A large and dynamic Illumina user community has published tens of thousands of customer-authored scientific papers using our technologies. Through rapid innovation, we are changing the economics of genetic research, enabling projects that were previously considered impossible, and supporting clinical advances towards precision medicine.

Most of our product sales consist of instruments and consumables, which include reagents, flow cells, and microarrays, based on our proprietary technologies. We also perform various services for our customers. In 2019, 2018, and 2017, instrument sales represented 15%, 17%, and 19%, respectively, of total revenue; consumable sales represented 68%, 65%, and 64%, respectively, of total revenue; and services represented 17%, 18%, and 17%, respectively, of total revenue.

Figure 1: Illumina Platform Overview:



From genome-wide discovery to targeted validation and screening

	Sequencing*					Sequencing and Arrays	Arrays
Instrument	NovaSeq™ 6000 System	NextSeq™ 2000 System	MiSeq™ and MiSeqDx Systems	MiniSeq™ System	iSeq™ 100 System	NextSeq™ 550 and NextSeq™ 550Dx Systems	iScan™ System
Technologies	Sequencing by synthesis (SBS) powered by TruSeq™ Chemistry					SBS, TruSeq, BeadChip Infinium™, Infinium XT	BeadArray, Infinium
Applications	Scalable throughput and flexibility for virtually any genome, sequencing method, and scale of project	Small whole-genome sequencing, exome, liquid biopsy, DNA+RNA panels, multi-omic single-cell, and deep metagenomic sequencing	MiSeq System – small genome, amplicon, targeted gene panel sequencing MiSeqDx System – FDA-cleared IVD system for CF screening and user-defined assays	Targeted DNA and RNA sequencing	Targeted, bacterial, and viral sequencing	NextSeq 550 System – Whole-genome sequencing, exome, transcriptome, sequencing, and CNV analysis NextSeq 550Dx System – FDA-cleared and CE-IVD system for NGS IVD assays and clinical research	SNP and whole-genome genotyping, CNV analysis, gene regulation, epigenetic analysis, gene expression analysis, and cytogenetic analysis

*Our HiSeq™ series of instruments, including the HiSeq 4000 and HiSeq X, have been discontinued and are not included in this chart. However, we continue to provide support and sell consumables to customers through March 31, 2024.

Sequencing

DNA sequencing is the process of determining the order of nucleotide bases (A, C, G, or T) in a DNA sample. Our portfolio of sequencing platforms represents a family of systems that we believe set the standard for productivity, cost-effectiveness, and accuracy among NGS technologies. Customers use our platforms to perform whole-genome, de novo, exome and RNA sequencing, and targeted resequencing of specific gene regions and genes.

Whole-genome sequencing determines the complete DNA sequence of an organism. In de novo sequencing, the goal is to sequence and assemble the genome of that sample without using information from prior sequencing of that species. In targeted resequencing, a portion of the sequence of an organism is compared to a standard or reference sequence from previously sequenced samples to identify genetic variation. Understanding the similarities and differences in DNA sequence between and within species helps us understand the function of the structures encoded in the DNA.

Our DNA sequencing technology is based on our proprietary reversible terminator-based sequencing chemistry, referred to as sequencing by synthesis (SBS) biochemistry. SBS tracks the addition of labeled nucleotides as the DNA chain is copied in a massively parallel fashion. Our SBS sequencing technology provides researchers with a broad range of applications and the ability to sequence even large mammalian genomes in a few days rather than weeks or years.

Our sequencing platforms can generate between 500 megabases (Mb) and 6.0 terabases (Tb) (equivalent to approximately 48 human genomes) of genomic data in a single run, depending on the instrument and application.

There are different price points per gigabase (Gb) for each instrument, and for different applications, which range from small-genome, amplicon, and targeted gene-panel sequencing to population-scale whole human genome sequencing. Since we launched our first sequencing system in 2007, our systems have reduced the cost of sequencing by a factor of more than 10,000. In addition, the sequencing time per Gb has dropped by a factor of approximately 12,000.

Our BaseSpace Informatics Suite cloud platform plays a critical role in supporting our sequencing applications. BaseSpace Informatics Suite integrates directly with our sequencing instruments, allowing customers to manage their biological sample and sequencing runs, process and analyze the raw genomic data, and derive meaningful results. It facilitates data sharing, provides data-storage solutions and streamlines analysis through a growing number of applications developed by us and the bioinformatics community.

In 2019, 2018, and 2017, total sequencing revenue comprised 87%, 83%, and 83%, respectively, of total revenue.

Arrays

Arrays are used for a broad range of DNA and RNA analysis applications, including SNP genotyping, CNV analysis, gene expression analysis, and methylation analysis, and enable the detection of millions of known genetic markers on a single array. Arrays are the primary technology used in consumer genomics applications.

Our BeadArray technology combines microscopic beads and a substrate in a proprietary manufacturing process to produce arrays that can perform many assays simultaneously. This facilitates large-scale analysis of genetic variation and biological function in a unique, high-throughput, cost-effective, and flexible manner. Using our BeadArray technology, we achieve high-throughput analysis via a high density of test sites per array and the ability to format arrays in various configurations. To serve the needs of multiple markets and market segments, we can vary the size, shape, and format of the substrate into which the beads self-assemble and create specific bead types for different applications. Our iScan System and our NextSeq 550 System can be used to image arrays.

In 2019, 2018, and 2017, total array revenue comprised 13%, 17%, and 17%, respectively, of total revenue.

Consumables

We have developed various library preparation and sequencing kits to simplify workflows and accelerate analysis. Our sequencing applications include whole-genome sequencing kits, which sequence entire genomes of any size and complexity, and targeted resequencing kits, which can sequence exomes, specific genes, RNA or other genomic regions of interest. Our sequencing kits maximize the ability of our customers to characterize the target genome accurately and are sold in various configurations, addressing a wide range of applications.

Customers use our array-based genotyping consumables for a wide range of analyses, including diverse species, disease-related mutations, and genetic characteristics associated with cancer. Customers can select from a range of human, animal, and agriculturally relevant genome panels or create their own custom arrays to investigate millions of genetic markers targeting any species.

Services

We provide whole-genome sequencing, genotyping, NIPT, and product support services. Human whole-genome sequencing services are provided through our CLIA-certified, CAP-accredited laboratory. Using our services, customers can perform whole-genome sequencing projects and microarray projects (including large-scale genotyping studies and whole-genome association studies). We also provide NIPT services through our partner laboratories that direct samples to us on a test send-out basis in our CLIA-certified, CAP-accredited laboratory. In addition, we also offer support services to customers who have purchased our products.

Intellectual Property

We have an extensive intellectual property portfolio. As of January 16, 2020, we owned or had exclusive licenses to 799 issued U.S. patents and 617 pending U.S. patent applications, including 61 allowed applications that have not yet issued as patents. Our issued and pending patents cover various aspects of our arrays, assays, oligo synthesis, sequencing technology, instruments, digital microfluidics, software, bioinformatics, and chemical-detection technologies, and have terms that expire between 2020 and 2040. We continue to file new patent applications to protect the full range of our technologies. We have filed or have been granted counterparts for many of these patents and applications in foreign countries.

We protect our trade secrets, know-how, copyrights, and trademarks. Our success depends in part on obtaining patent protection for our products and processes, preserving trade secrets, patents, obtaining copyrights and trademarks, operating without infringing the proprietary rights of third parties, and acquiring licenses for technology or products. In addition, we invest in technological innovation, and we seek beneficial licensing opportunities to develop and maintain our competitive position.

We are party to various exclusive and nonexclusive license agreements and other arrangements with third parties that grant us rights to use key aspects of our sequencing and array technologies, assay methods, chemical detection methods, reagent kits, and scanning equipment. We have additional nonexclusive license agreements with various third parties for other components of our products. In most cases, the agreements remain in effect over the term of the underlying patents, may be terminated at our request without further obligation, and require that we pay customary royalties.

Research and Development

We have historically made substantial investments in research and development. Our research and development efforts prioritize continuous innovation coupled with product evolution.

Research and development expense in 2019, 2018, and 2017 was $647 million, $623 million, and $546 million, respectively. We expect research and development expense to increase during 2020 to support business growth and continuing expansion in research and product-development efforts.

Marketing and Distribution

We market and distribute our products directly to customers in North America, Europe, Latin America, and the Asia-Pacific region. In addition, we sell through life-science distributors in certain markets within Europe, the Asia-Pacific region, Latin America, the Middle East, and Africa. We expect to continue increasing our sales and distribution resources during 2020 and beyond as we launch new products and expand our potential customer base.

Manufacturing

We manufacture sequencing and array platforms and reagent kits. In 2019, we continued to increase our manufacturing capacity to meet customer demand. To address increasing product complexity and volume, we continue to automate manufacturing processes to accelerate throughput and improve quality and yield. We are committed to providing medical devices and related services that consistently meet customer and applicable regulatory requirements. We adhere to access and safety standards required by federal, state, and local health ordinances, such as standards for the use, handling, and disposal of hazardous substances. Our key manufacturing and distribution facilities operate under a quality management system certified to ISO 13485.

Raw Materials

Our manufacturing operations require a wide variety of raw materials, electronic and mechanical components, chemical and biochemical materials, and other supplies. Multiple commercial sources provide many of our components and supplies, but there are some raw materials and components that we obtain from single-source suppliers. To manage potential risks arising from single-source suppliers, we believe that, if necessary, we could redesign our products using alternative components or for use with alternative reagents or develop an internal supply capability. In addition, while we attempt to keep our inventory at minimal levels, we purchase incremental inventory as circumstances warrant to protect our supply chain. If the capabilities of our suppliers and component

manufacturers are limited or stopped, due to disasters, quality, regulatory, or other reasons, it could negatively impact our ability to manufacture our products.

Competition

Although we believe that our products and services provide significant advantages over products and services currently available from other sources, we expect continued intense competition. Our competitors offer products and services for sequencing, SNP genotyping, gene expression, and molecular diagnostics markets. In some cases, we compete for the resources our customers allocate for purchasing a wide range of sequencing and non-sequencing products used to analyze genetic variation and biological function, some of which are complementary or adjacent to our own but not directly competitive; in other cases, our products face direct competition as customers choose among sequencing and non-sequencing products that are designed to address the same use case or answer the same biological question. Some of our competitors have, or will have, substantially greater financial, technical, research, and other resources than we do, along with larger, more established marketing, sales, distribution, and service organizations. In addition, they may have greater name recognition than we do in the markets we address, and in some cases a larger installed base of systems. We expect new competitors to emerge and the intensity of competition to increase. To compete effectively, we must scale our organization and infrastructure appropriately and demonstrate that our products have superior throughput, cost, and accuracy.

Segment and Geographic Information

We have one reportable segment, Core Illumina, which relates to Illumina's core operations. Prior to the Helix deconsolidation on April 25, 2019, our reportable segments included both Core Illumina and Helix. Prior to the deconsolidation of GRAIL on February 28, 2017, our Consolidated VIEs reportable segment included the combined operations of Helix and GRAIL.

We currently sell our products to a number of customers outside the United States, including customers in other areas of North America, Latin America, Europe, China, and the Asia-Pacific region. Shipments to customers outside the United States totaled $1,684 million, or 48%, of total revenue, in 2019, compared to $1,554 million, or 47%, and $1,241 million, or 45%, in 2018 and 2017, respectively. We consider the U.S. dollar to be the functional currency of our international operations due to the primary activities of our foreign subsidiaries. We expect that sales to international customers will continue to be an important and growing source of revenue. See note "1. Organization and Significant Accounting Policies" and note "2. Revenue" within the Consolidated Financial Statements section of this report for further information concerning our foreign and domestic operations.

Backlog

Our backlog was approximately $980 million and $909 million as of December 29, 2019 and December 30, 2018, respectively. Generally, our backlog consists of orders believed to be firm as of the balance sheet date. However, we may allow customers to make product substitutions as we launch new products. The timing of shipments depends on several factors, including agreed upon shipping schedules, which may span multiple quarters, and whether the product is catalog or custom. We expect approximately 66% of our backlog as of December 29, 2019, to be shipped in 2020, approximately 14% in 2021, and the remainder thereafter. Although we generally recognize revenue when control of our products and services is transferred to our customers, some customer contracts might require us to defer revenue recognition beyond the transfer of control.

Properties

The following table summarizes the facilities we leased as of December 29, 2019, including the location and size of each principal facility, and their designated use. We believe our facilities are adequate for our current and near-term needs, and we will be able to locate additional facilities, as needed.

Location	Approximate Square Feet	Operation	Lease Expiration Dates
San Diego, CA *	1,193,000	Office, Lab, Manufacturing, and Distribution	2020 – 2031
San Francisco Bay Area, CA	464,000	Office, Lab, and Manufacturing	2025 – 2033
Singapore *	395,000	Office, Lab, Manufacturing, and Distribution	2020 – 2025
Cambridge, United Kingdom	187,000	Office, Lab, and Manufacturing	2020 – 2039
Madison, WI	133,000	Office, Lab, and Manufacturing	2033
China	55,000	Office and Lab	2021 – 2025
Eindhoven, the Netherlands	42,000	Office and Distribution	2020
Other	62,000	Office	2020 – 2025

*Excludes approximately 278,000 square feet for which the leases do not commence until 2020 and beyond.

Employees

As of December 29, 2019, we had more than 7,700 employees. We consider our employee relations to be positive. Our success will depend in large part upon our ability to attract and retain employees. We face competition in this regard from other companies, research and academic institutions, government entities, and other organizations. In addition, we contract with a number of temporary and contract employees.

Environmental Matters

We are committed to the protection of our employees and the environment. Our operations require the use of hazardous materials that subject us to various federal, state, and local environmental and safety laws and regulations. We believe that we are in material compliance with current applicable laws and regulations. However, we could be held liable for damages and fines should contamination of the environment or individual exposures to hazardous substances occur. In addition, we cannot predict how changes in these laws and regulations, or the development of new laws and regulations, will affect our business operations or the cost of compliance.

Government Regulation

As we expand product lines to address the diagnosis of disease, regulation by governmental authorities in the United States and other countries will become an increasingly significant factor in development, testing, production, and marketing. Products that we develop in the molecular diagnostic markets, depending on their intended use, may be regulated as medical devices or in vitro diagnostic products (IVDs) by the FDA and comparable agencies in other countries. In the United States, certain of our products may require FDA clearance following a pre-market notification process, also known as a 510(k) clearance, or premarket approval (PMA) from the FDA. The usually shorter 510(k) clearance process, which we used for the FDA-cleared assays that are run on our FDA-regulated MiSeqDx instrument, generally takes from three to six months after submission, but it can take significantly longer. The longer PMA process, which we used for our FDA-cleared RAS panel that is also run on our MiSeqDx instrument, is typically much more costly and uncertain. It can take from 9 to 18 months after a complete filing, but it can take significantly longer and requires conducting clinical studies that are generally more extensive than those required for 510(k) clearance. All of the products that are currently regulated by the FDA as medical devices and IVDs are also subject to the FDA Quality System Regulation (QSR). Obtaining the requisite regulatory approvals, including the FDA quality system inspections that are required for PMA approval, can be expensive and may involve considerable delay.

In the U.S., the products we develop for oncology and non-invasive prenatal testing will be regulated by the PMA process. We cannot be certain which of our other planned molecular diagnostic products will be subject to the shorter 510(k) clearance process, or which of will need to go through the PMA process.

The regulatory approval process for such products may be significantly delayed, may be significantly more expensive than anticipated, and may conclude without such products being approved by the FDA. Without timely regulatory approval, we will not be able to launch or successfully commercialize such products.

Changes to the current regulatory framework, including the imposition of additional or new regulations, could arise at any time during the development or marketing of our products. This may negatively affect our ability to obtain or maintain FDA or comparable regulatory clearance or approval of our products. In addition, regulatory agencies may introduce new requirements that may change the regulatory requirements for us or our customers, or both.

If our products labeled as “For Research Use Only,” or RUO, are used, or could be used, for the diagnosis of disease, the regulatory requirements related to marketing, selling, and supporting such products could be uncertain. This is true even if such use by our customers occurs without our consent. If the FDA or other regulatory authorities assert that any of our RUO products are subject to regulatory clearance or approval, our business, financial condition, or results of operations could be adversely affected.

Our products sold as medical devices or IVDs in Europe will be regulated under the In Vitro Diagnostics Directive (98/79/EC). A new regulation, the in vitro Diagnostic Medical Devices Regulation (EU) 2017/746, the IVDR, has been released and will become fully enforceable in 2022. These regulations include requirements for both presentation and review of performance data and quality-system requirements.

Certain of our products are currently available through laboratories that are certified under the Clinical Laboratory Improvements Amendments (CLIA) of 1988. These products are commonly called “laboratory developed tests,” or LDTs. For a number of years, the FDA has exercised its regulatory enforcement discretion not to regulate LDTs as medical devices if created and used within a single laboratory. However, the FDA is continually reexamining this regulatory approach and changes to the agency’s handling of LDTs could impact our business in ways that cannot be predicted at this time. We cannot predict the nature or extent of the FDA's final guidance or regulation of LDTs, in general, or with respect to our or our customers’ LDTs, in particular.

Certification of CLIA laboratories includes standards in the areas of personnel qualifications, administration, and participation in proficiency testing, patient test management, and quality control procedures. CLIA also mandates that, for high complexity labs such as ours, to operate as a lab, we must have an accreditation by an organization recognized by CLIA such as the College of Pathologists (CAP), which we have obtained and must maintain. If we were to lose our CLIA certification or CAP accreditation, our business, financial condition, or results of operations could be adversely affected. In addition, state laboratory licensing and inspection requirements may also apply to our products, which, in some cases, are more stringent than CLIA requirements.

RISK FACTORS

Our business is subject to various risks, including those described below. In addition to the other information included in this report, the following issues could adversely affect our operating results or our stock price.

Our continued growth is dependent on continuously developing and commercializing new products.

Our target markets are characterized by rapid technological change, evolving industry standards, changes in customer needs, existing and emerging competition, strong price competition, and frequent new product introductions. Accordingly, our continued growth depends on developing and commercializing new products and services, including improving our existing products and services, in order to address evolving market requirements on a timely basis. If we fail to innovate or adequately invest in new technologies, our products and services will become dated, and we could lose our competitive position in the markets that we serve as customers purchase new products offered by our competitors. We believe that successfully introducing new products and technologies on a timely basis provides a significant competitive advantage because customers invest time in selecting and learning to use a new product and may be reluctant to switch once that selection is made.

To the extent that we fail to introduce new and innovative products, or such products are not accepted in the market or suffer significant delays in development, we may lose market share to our competitors, which will be difficult or impossible to regain. An inability, for technological or other reasons, to successfully develop and introduce new products on a timely basis could reduce our growth rate or otherwise have an adverse effect on our business.

In the past, we have experienced, and are likely to experience in the future, delays in the development and introduction of new products. There can be no assurance that we will keep pace with the rapid rate of change in our markets or that our new products will adequately meet the requirements of the marketplace, achieve market acceptance, or compete successfully with third-party technologies. Some of the factors affecting our ability to develop and successfully commercialize new products and services include:

- the functionality and performance of new and existing products and services;
- the timing of introduction of new products or services relative to competing products and services;
- availability, quality, and price relative to competing products and services;
- scientists' and customers' opinions of the utility of new products or services;
- citation of new products or services in published research;
- regulatory trends and approvals;
- our ability to acquire or otherwise gain access to third party technologies, products, or businesses; and
- general trends in life sciences research and applied markets.

We may also have to write off excess or obsolete inventory if sales of our products are not consistent with our expectations or the market requirements for our products change due to technical innovations in the marketplace.

Our success depends upon the continued emergence and growth of markets for analysis of genetic variation and biological function, and continued substantial increases in the use of sequencing as the cost of sequencing declines.

Our products are designed for use in the life sciences, diagnostic, agricultural, pharmaceutical, and consumer genomics industries. The usefulness of our technologies depends in part upon the availability of genetic data and its usefulness in clinical, research, and consumer applications. We are focusing on markets for analysis of genetic variation or biological function, namely sequencing, genotyping, and gene expression profiling. These markets are relatively new and emerging, and they may not develop as quickly as we anticipate, or reach what we expect to be their full potential. Other methods of analysis of genetic variation and biological function may emerge and displace the methods we are developing. Also, researchers may not be able to successfully analyze raw genetic data or be able to convert raw genetic data into valuable information. In addition, factors affecting research and development spending generally could harm our business, such as changes in the regulatory environment affecting life sciences and pharmaceutical companies, and changes in government programs that provide funding to companies and research institutions. If useful genetic data is not available or if our target markets do not develop in a timely manner, demand for our products may grow at a slower rate than we expect.

The introduction of next-generation sequencing technologies, including ours, has reduced the cost of sequencing by a factor of more than 10,000 and reduced the sequencing time per Gb by a factor of approximately 12,000 over the last 20 years. Consequently, demand for sequencing-related products and services has increased substantially as new applications are enabled and more sequencing is done in connection with existing applications. If, as we expect, the cost of sequencing continues to fall over time, we cannot be sure that the demand for related products and services will increase at least proportionately as new applications are enabled or more sequencing is done in connection with existing applications. In the future, if demand for our products and services due to lower sequencing costs is less than we expect, our business, financial condition, and results of operations will be adversely affected.

If we do not successfully manage the development, manufacturing, and launch of new products or services, including product transitions, our financial results could be adversely affected.

We face risks associated with launching new products and pre-announcing products and services when the products or services have not been fully developed or tested. In addition, we may experience difficulty in managing or forecasting customer reactions, purchasing decisions, transition requirements, or programs with respect to newly-launched products (or products in development), which could adversely affect sales of our existing products.

If our products and services are not able to deliver the performance or results expected by our target markets or are not delivered on a timely basis, our reputation and credibility may suffer. If we encounter development challenges or discover errors in our products late in our development cycle, we may delay the product launch date. The expenses or losses associated with unsuccessful product development or launch activities, or a lack of market acceptance of our new products, could adversely affect our business, financial condition, or results of operations.

As we announce future products or integrate new products into our portfolio, such as new instruments or instrument platforms, we face numerous risks relating to product transitions and the evolution of our product portfolio. We may be unable to accurately forecast new product demand and the impact of new products on the demand for current or established products. We may experience challenges relating to managing excess and obsolete inventories, managing new or higher product cost structures, and managing different sales and support requirements. Announcements of currently planned or other new products may cause customers to defer or stop purchasing our current or established products until new products become available. In addition, customers may defer or stop purchasing our current or established products as they assess the features and technological characteristics of new products, as compared to our current or established products, before making a financial commitment. Our failure to effectively manage the evolution of our product portfolio, including product transitions or introductions, could adversely affect our business, financial condition, or results of operations.

We face intense competition, which could render our products obsolete, result in significant price reductions, or substantially limit the volume of products that we sell.

We compete with third parties that design, manufacture, and market products and services for analysis of genetic variation and biological function and other applications using a wide range of technologies. In some cases, we compete for the resources our customers allocate for purchasing a wide range of sequencing and non-sequencing products used to analyze genetic variation and biological function, some of which are complementary or adjacent to our own but not directly competitive; in other cases, our products face direct competition as customers choose among sequencing and non-sequencing products that are designed to address the same use case or answer the same biological question. For example, complementary third-party sequencing technologies address use cases to which our products are not well suited. If we are unable to develop or acquire new technologies that address these complementary sequencing applications, our rate of growth and our ability to grow the overall market for sequencing could be adversely affected.

We anticipate that we will continue to face increased competition as existing companies develop new or improved products and as new companies enter the market with new technologies. One or more of our competitors may render one or more of our technologies obsolete or uneconomical. Some of our competitors have greater financial and personnel resources, broader product lines, more focused product lines, a more established customer base, more experience and broader reach in clinical markets, and more experience in research and development than we do. Furthermore, life sciences, clinical genomics, and pharmaceutical companies, which are our potential customers and strategic partners, could also develop competing products. We believe that customers in our markets display a significant amount of loyalty to their initial supplier of a particular product; therefore, it may be difficult to generate sales to potential customers who have purchased products from competitors. To the extent we are unable to be the first to develop or supply new products, our competitive position may suffer.

The market for clinical and diagnostic products, in particular, is currently limited and highly competitive, with several large companies having significant market share, intellectual property portfolios, and regulatory expertise. For example, the market for noninvasive prenatal testing is rapidly developing, and if our competitors are able to develop and commercialize products superior to or less expensive than ours or are able to obtain regulatory clearances before we do, our business could be adversely impacted. Established clinical and diagnostic companies also have an installed base of instruments in several markets, including clinical and reference laboratories, which could deter acceptance of our products. In addition, some of these companies have formed alliances with genomics companies that provide them access to genetic information that may be incorporated into their diagnostic tests, potentially creating a competitive advantage for them.

We depend on third-party manufacturers and suppliers for some of our products, or sub-assemblies, components, and materials used in our products, and if shipments from these manufacturers or suppliers are delayed or interrupted, or if the quality of the products, components, or materials supplied do not meet our requirements, we may not be able to launch, manufacture, or ship our products in a timely manner, or at all.

The complex nature of our products requires customized, precision-manufactured sub-assemblies, components, and materials that currently are available from a limited number of sources, and, in the case of some sub-assemblies, components, and materials, from only a single source. If deliveries from these vendors are delayed or interrupted for any reason, or if we are otherwise unable to secure a sufficient supply, we may not be able to obtain these sub-assemblies, components, or materials on a timely basis or in sufficient quantities or at satisfactory qualities, or at all, in order to meet demand for our products. We may need to enter into contractual relationships with manufacturers for commercial-scale production of some of our products, in whole or in part, or develop these capabilities internally, and there can be no assurance that we will be able to do this on a timely basis, in sufficient quantities, or on commercially reasonable terms. In addition, the lead time needed to establish a relationship with a new supplier can be lengthy, and we may experience delays in meeting demand in the event we must switch to a new supplier. The time and effort required to qualify a new supplier could result in additional costs, diversion of resources, or reduced manufacturing yields, any of which would negatively impact our operating results. Accordingly, we may not be able to establish or maintain reliable, high-volume manufacturing at commercially reasonable costs or at all. In addition, the manufacture or shipment of our products may be delayed or interrupted if the quality of the products, sub-assemblies, components, or materials supplied by our vendors does not meet our requirements. Current or future social and environmental regulations or critical issues, such as those relating to the sourcing of conflict minerals from the Democratic Republic of the Congo or the need to eliminate environmentally sensitive materials from our products, could restrict the supply of components and materials used in production or increase our costs. Any delay or interruption to our manufacturing process or in shipping our products could result in lost revenue, which would adversely affect our business, financial condition, or results of operations.

If defects are discovered in our products, we may incur additional unforeseen costs, our products may be subject to recalls, customers may not purchase our products, our reputation may suffer, and ultimately our sales and operating earnings could be negatively impacted.

Our products incorporate complex, precision-manufactured mechanical parts, electrical components, optical components, and fluidics, as well as computer software and complex surface chemistry and reagents, any of which may contain or result in errors or failures, especially when first introduced. In the course of conducting our business, we must adequately address quality issues associated with our products and services, including defects in our engineering, design, and manufacturing processes, as well as defects in third-party components included in our products. In addition, new products or enhancements may contain undetected errors or performance problems that, despite testing, are discovered only after commercial shipment. Defects or errors in our products may discourage customers from purchasing our products. The costs incurred in correcting any defects or errors may be substantial and could adversely affect our operating margins. Identifying the root cause of quality issues, particularly those affecting reagents and third-party components, may be difficult, which increases the time needed to address quality issues as they arise, and increases the risk that similar problems could recur. Because our products are designed to be used to perform complex genomic analysis, we expect that our customers will have an increased sensitivity to such defects. If we do not meet applicable regulatory or quality standards, our products may be subject to recall, and, under certain circumstances, we may be required to notify applicable regulatory authorities about a recall. If our products are subject to recall or shipment holds, our reputation, business, financial condition, or results of operations could be adversely affected.

If we fail to maintain and successfully manage our strategic collaborations, our future results may be adversely impacted.

Strategic collaborations require significant management attention and operational resources. If we are unable to successfully manage or meet milestones related to our strategic collaborations, or if our partners do not perform as we expect, our future results may be adversely impacted. Furthermore, dependence on collaborative arrangements may also subject us to other risks, including:

- we may be required to relinquish important rights, including intellectual property, marketing and distribution rights;
- we may disagree with our partners as to rights to intellectual property, the direction of research programs, or commercialization activities;
- Our revenues may be lower than if we were to develop and commercialize such products ourselves;

- a collaboration partner could develop and market a product that is competitive with either products developed under the collaboration or other of our products, either independently or in collaboration with others, including our competitors;
- our partners could become unable or less willing to expend their resources in support of our collaboration;
- collaborations could expose us to additional regulatory risks; and
- we may be unsuccessful at managing multiple simultaneous collaborations.

Moreover, disagreements with a partner or former partner could develop, and any conflict with a partner or former partner could reduce our ability to enter into future collaboration agreements and negatively impact our relationships with one or more existing partners.

As we develop, market, or sell diagnostic tests, we may encounter delays in receipt, or limits in the amount, of reimbursement approvals and public health funding, which will impact our ability to grow revenues in the healthcare market.

Physicians and patients may not order diagnostic tests that we develop, market, sell, or enable such as our prenatal tests, unless third-party payors, such as managed care organizations as well as government payors such as Medicare and Medicaid and governmental payors outside of the United States, pay a substantial portion of the test price. Third-party payors are often reluctant to reimburse healthcare providers for the use of medical tests that involve new technologies or provide novel diagnostic information. In addition, third-party payors are increasingly limiting reimbursement coverage for medical diagnostic products and, in many instances, are exerting pressure on diagnostic product suppliers to reduce their prices. Reimbursement by a payor may depend on a number of factors, including a payor's determination that tests using our technologies are:

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

Since each third-party payor often makes reimbursement decisions on an individual patient basis, obtaining such approvals is a time-consuming and costly process that requires us to provide scientific and clinical data supporting the clinical benefits of each of our products. As a result, there can be no assurance that reimbursement approvals will be obtained. This process can delay the broad market introduction of new products, and could have a negative effect on our results of operations. As a result, third-party reimbursement may not be consistent or financially adequate to cover the cost of diagnostic products that we develop, market, or sell. This could limit our ability to sell our products or cause us to reduce prices, which would adversely affect our results of operations.

Even if our tests are reimbursed, third-party payors may withdraw their coverage policies, cancel their contracts with our customers at any time, review and adjust the rate of reimbursement, require co-payments from patients, or stop paying for our tests, which would reduce our revenues. 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. These measures have resulted in reduced payment rates and decreased utilization for the clinical laboratory industry. Reductions in the reimbursement rate of payors may occur in the future. Reductions in the prices at which our tests are reimbursed could have a negative impact on our results of operations.

Litigation, other proceedings, or third-party claims of intellectual property infringement could require us to spend significant time and money and could prevent us from selling our products or services.

Our success depends in part on our non-infringement of the patents or proprietary rights of third parties. Third parties have asserted and may in the future assert that we are employing their proprietary technology without authorization. As we enter new markets or introduce new products, we expect that competitors will likely claim that our products infringe their intellectual property rights as part of a business strategy to impede our successful competition. In addition, third parties may have obtained and may in the future obtain patents allowing them to claim that the use of our technologies infringes these patents. We could incur substantial costs and divert the attention of our management and technical personnel in defending ourselves 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. Furthermore, parties making claims against us may be able to obtain injunctive or other relief, which effectively could block our ability to develop further, commercialize, or sell products or services, and could result in the award of substantial damages against us. In the event of a successful infringement claim 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 or services. In addition, we may be unable 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 and earnings per share. In addition, we could encounter delays in product introductions while we attempt to develop alternative methods or products. 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 or services could adversely affect our ability to grow or maintain profitability.

Reduction or delay in research and development budgets and government funding may adversely affect our revenue.

The timing and amount of revenues from customers that rely on government and academic research funding may vary significantly due to factors that can be difficult to forecast, and there is significant uncertainty concerning government and academic research funding worldwide. Funding for life science research can be volatile during periods of economic uncertainty. Government funding of research and development is subject to the political process, which is inherently fluid and unpredictable. Other programs, such as defense, entitlement programs, or general efforts to reduce budget deficits could be viewed by governments as a higher priority. These budgetary pressures may result in reduced allocations to government agencies that fund research and development activities, such as the U.S. National Institute of Health, or NIH. Past proposals to reduce budget deficits have included reduced NIH and other research and development allocations. Any shift away from the funding of life sciences research and development or delays surrounding the approval of government budget proposals may cause our customers to delay or forego purchases of our products, which could adversely affect our business, financial condition, or results of operations.

Our acquisitions expose us to risks that could adversely affect our business, and we may not achieve the anticipated benefits of acquisitions of businesses or technologies.

As part of our strategy to develop and identify new products, services, and technologies, we have made, and may continue to make, acquisitions of technologies, products, or businesses. Acquisitions involve numerous risks and operational, financial, and managerial challenges, including the following, any of which could adversely affect our business, financial condition, or results of operations:

- difficulties in integrating new operations, technologies, products, and personnel;
- lack of synergies or the inability to realize expected synergies and cost-savings;
- lengthy, expensive, and time and resource-intensive regulatory review processes, the outcomes of which can be unpredictable;
- difficulties in managing geographically dispersed operations;
- underperformance of any acquired technology, product, or business relative to our expectations and the price we paid;
- negative near-term impacts on financial results after an acquisition, including acquisition-related earnings charges;
- the potential loss of key employees, customers, and strategic partners of acquired companies;

- claims by terminated employees and shareholders of acquired companies or other third parties related to the transaction;
- the issuance of dilutive securities, assumption or incurrence of additional debt obligations or expenses, or use of substantial portions of our cash;
- diversion of management's attention and company resources from existing operations of the business;
- inconsistencies in standards, controls, procedures, and policies;
- the impairment of intangible assets as a result of technological advancements, or worse-than-expected performance of acquired companies; and
- assumption of, or exposure to, known or unknown contingent liabilities or liabilities that are difficult to identify or accurately quantify.

In addition, the successful integration of acquired businesses requires significant efforts and expense across all operational areas, including sales and marketing, research and development, manufacturing, finance, legal, and information technologies. There can be no assurance that any of the acquisitions we make will be successful or will be, or will remain, profitable. Our failure to successfully address the above risks may prevent us from achieving the anticipated benefits from any acquisition in a reasonable time frame, or at all.

If we are unable to increase our manufacturing or service capacity and develop and maintain operation of our manufacturing or service capability, we may not be able to launch or support our products or services in a timely manner, or at all.

We continue to increase our manufacturing and service capacity to meet the anticipated demand for our products. Although we have significantly increased our manufacturing and service capacity and we believe we have plans in place sufficient to ensure we have adequate capacity to meet our current business plans, there are uncertainties inherent in expanding our manufacturing and service capabilities, and we may not be able to sufficiently increase our capacity in a timely manner. For example, manufacturing and product quality issues may arise as we increase production rates at our manufacturing facilities and launch new products. Also, we may not manufacture the right product mix to meet customer demand, especially as we introduce new products. As a result, we may experience difficulties in meeting customer, collaborator, and internal demand, in which case we could lose customers or be required to delay new product introductions, and demand for our products could decline. Additionally, in the past, we have experienced variations in manufacturing conditions and quality control issues that have temporarily reduced or suspended production of certain products. Due to the intricate nature of manufacturing complex instruments, consumables, and products that contain DNA and enzymes, we may encounter similar or previously unknown manufacturing difficulties in the future that could significantly reduce production yields, impact our ability to launch or sell these products (or to produce them economically), or prevent us from achieving expected performance levels, any of which could adversely affect our business, financial condition, or results of operations.

An interruption in our ability to manufacture our products or an inability to obtain key components or raw materials due to a catastrophic disaster or infrastructure could adversely affect our business.

We currently manufacture in a limited number of locations. Our manufacturing facilities are located in San Diego and the San Francisco Bay Area in California; Madison, Wisconsin; Cambridge, United Kingdom; and Singapore. These areas are subject to natural disasters such as earthquakes, wildfires, or floods. If a natural disaster were to damage one of our facilities significantly or if other events, such as the outbreak of a serious infectious disease, were to cause our operations to fail or be significantly curtailed, we may be unable to manufacture our products, provide our services, or develop new products. In addition, if the capabilities of our suppliers and component manufacturers are limited or stopped, due to disasters, quality, regulatory, or other reasons, it could negatively impact our ability to manufacture our products.

Many of our manufacturing processes are automated and are controlled by our custom-designed laboratory information management system (LIMS). Additionally, the decoding process in our array manufacturing requires significant network and storage infrastructure. If either our LIMS system or our networks or storage infrastructure were to fail for an extended period of time, our ability to manufacture our products on a timely basis could be adversely impacted and we could be prevented from achieving our expected shipments in any given period.

If we lose our key personnel or are unable to attract and retain additional personnel, we may be unable to achieve our goals.

Our future success depends upon the continuing services of members of our senior management team and scientific and engineering personnel. The loss of their services could adversely impact our ability to achieve our business objectives. In addition, the continued growth of our business depends on our ability to hire additional qualified personnel with expertise in molecular biology, chemistry, biological information processing, software, engineering, sales, marketing, and technical support. We compete for qualified management and scientific personnel with other life science and technology companies, universities, and research institutions. Competition for these individuals, particularly in the San Diego and San Francisco areas, is intense, and the turnover rate can be high. Moreover, changes in immigration policies, laws and regulations in the United States or other jurisdictions may make it more difficult for us to hire and retain members of management and scientific and engineering personnel. Failure to attract and retain management and scientific and engineering personnel could prevent us from pursuing collaborations or developing our products or technologies. Additionally, integration of acquired companies and businesses can be disruptive, causing key employees of the acquired business to leave. Further, we use share-based compensation, including restricted stock units and performance stock units, to attract key personnel, incentivize them to remain with us, and align their interests with ours by building long-term stockholder value. If our stock price decreases, the value of these equity awards decreases and, therefore, reduces a key employee's incentive to stay.

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

The proprietary positions of companies developing tools for the life sciences, genomics, forensics, agricultural, and pharmaceutical industries, including our proprietary position, generally are uncertain and involve complex legal and factual questions. Our success depends to a large extent on our ability to develop proprietary products and technologies and to obtain patents and maintain adequate protection of our intellectual property in the United States and other countries. The laws of some foreign countries do not protect proprietary rights to the same extent as the laws of the United States, and many companies have encountered significant challenges in establishing and enforcing their proprietary rights outside of the United States. These challenges can be caused by the absence of rules and methods for the establishment and enforcement of intellectual property rights outside of the United States.

We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies are covered by valid and enforceable patents or are effectively maintained as trade secrets. Any finding that our patents or applications are unenforceable could harm our ability to prevent others from practicing the related technology, and a finding that others have inventorship or ownership rights to our patents and applications could require us to obtain certain rights to practice related technologies, which may not be available on favorable terms, if at all. Furthermore, as issued patents expire, we may lose some competitive advantage as others develop competing products, and, as a result, we may lose revenue.

In addition, our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from practicing our technologies or from developing competing products and may therefore fail to provide us with any competitive advantage. We may need to initiate lawsuits to protect or enforce our patents, or litigate against third-party claims, which would be expensive, and, if we lose, may cause us to lose some of our intellectual property rights and reduce our ability to compete in the marketplace. Furthermore, these lawsuits may divert the attention of our management and technical personnel. There is also the risk that others may independently develop similar or alternative technologies or design around our patented technologies. In that regard, certain patent applications in the United States may be maintained in secrecy until the patents issue, and publication of discoveries in the scientific or patent literature tend to lag behind actual discoveries by several months.

We also rely upon trade secrets and proprietary know-how protection for our confidential and proprietary information, and we have taken security measures to protect this information. These measures, however, may not provide adequate protection for our trade secrets, know-how, or other confidential information.

Our strategic investments may result in losses.

We periodically make strategic investments in various public and private companies with businesses or technologies that may complement our business. In addition, we periodically form companies that remain consolidated within our financial statements but receive substantial funding from third-party investors who are granted certain control and governance rights.

The market values of these strategic investments may fluctuate due to market conditions and other conditions over which we have no control. Declines in the market price and valuations of the securities that we hold in other companies would require us to record losses related to our investment. This could result in future charges to our earnings. It is uncertain whether or not we will realize any long-term benefits associated with these strategic investments.

Security breaches, including with respect to cyber-security, and other disruptions could compromise our information, products, and services, disrupt our operations, and expose us to liability, which could cause our business and reputation to suffer.

In the ordinary course of our business, we collect and store sensitive data, including intellectual property, our proprietary business information (and that of our customers), and personally identifiable information of our customers and employees, in our data centers and on our networks. The secure maintenance of this information is important to our operations and business strategy. Despite our security measures, our information technology and infrastructure may be vulnerable to cyber-attacks by hackers or breached due to employee error, malfeasance, or other disruptions.

As a leader in the field of genetic analysis, we may face cyber-attacks that attempt to penetrate our network security, including our data centers; sabotage or otherwise disable our research, products, and services, including instruments at our customers' sites; misappropriate our or our customers' and partners' proprietary information, which may include personally identifiable information; or cause interruptions of our internal operations, systems and services. Any such breach could compromise our networks and the information stored there could be accessed, publicly disclosed, lost, or stolen. Any such access, disruption, disclosure, or other loss of information could result in an adverse impact on our business, legal claims or proceedings, liability under laws that protect the privacy of personal information, and damage to our reputation.

Our products, if used for the diagnosis of disease, could be subject to government regulation, and the regulatory approval and maintenance process for such products may be expensive, time-consuming, and uncertain both in timing and in outcome.

Our products are not subject to FDA clearance or approval if they are not intended to be used for the diagnosis, treatment or prevention of disease. However, as we expand our product line to encompass products that are intended to be used for the diagnosis of disease, such as our FDA-regulated MiSeqDx, certain of our products will become subject to regulation by the FDA, or comparable international agencies, including requirements for regulatory clearance or approval of such products before they can be marketed. Such regulatory approval processes or clearances may be expensive, time-consuming, and uncertain, and our failure to obtain or comply with such approvals and clearances could have an adverse effect on our business, financial condition, or operating results. In addition, changes to the current regulatory framework, including the imposition of additional or new regulations, could arise at any time during the development or marketing of our products, which may negatively affect our ability to obtain or maintain FDA or comparable regulatory approval of our products, if required.

Diagnostic products are regulated as medical devices by the FDA and comparable international agencies and may require either clearance from the FDA following the 510(k) pre-market notification process or pre-market approval from the FDA, in each case prior to marketing. Obtaining the requisite regulatory approvals can be expensive and may involve considerable delay. If we fail to obtain, or experience significant delays in obtaining, regulatory approvals for diagnostic products that we develop, we may not be able to launch or successfully commercialize such products in a timely manner, or at all.

In addition, if our products labeled as “For Research Use Only. Not for use in diagnostic procedures,” or RUO, are used, or could be used, for the diagnosis of disease, the regulatory requirements related to marketing, selling, and supporting such products could change or be uncertain, even if such use by our customers is without our consent. If the FDA or other regulatory authorities assert that any of our RUO products are subject to regulatory clearance or approval, our business, financial condition, or results of operations could be adversely affected.

If the FDA requires in the future that any of our LDT products be subject to regulatory clearance or approval, our business, financial condition, or results of operations could be adversely affected.

Certain of our diagnostic products are currently available through laboratories that are certified under the Clinical Laboratory Improvements Amendments (CLIA) of 1988. These products are commonly called “laboratory

developed tests," or LDTs. For a number of years, the FDA has exercised its regulatory enforcement discretion not to regulate LDTs as medical devices if created and used within a single laboratory. However, the FDA has been reconsidering its enforcement discretion policy and has commented that regulation of LDTs may be warranted because of the growth in the volume and complexity of testing services utilizing LDTs. We cannot predict the nature or extent of the FDA's final guidance or regulation of LDTs, in general, or with respect to our LDTs, in particular. If the FDA requires in the future that LDT products are subject to regulatory clearance or approval, our business, financial condition, or results of operations could be adversely affected.

If product or service liability lawsuits are successfully brought against us, we may face reduced demand for our products and incur significant liabilities.

Our products and services are used for sensitive applications, and we face an inherent risk of exposure to product or service liability claims if our products or services are alleged to have caused harm, resulted in false negatives or false positives, or do not perform in accordance with specifications. Product liability claims filed against us or against third parties to whom we may have an obligation could be costly and time-consuming to defend and result in substantial damages or reputational risk. We cannot be certain that we would be able to successfully defend any product or service liability lawsuit brought against us. Regardless of merit or eventual outcome, product or service liability claims may result in:

- decreased demand for our products;
- injury to our reputation;
- increased product liability insurance costs;
- costs of related litigation; and
- substantial monetary awards to plaintiffs.

Although we carry product and service liability insurance, if we become the subject of a successful product or service liability lawsuit, our insurance may not cover all substantial liabilities, which could have an adverse effect on our business, financial condition, or results of operations.

Doing business internationally, especially in emerging markets, creates operational risk for our business.

Conducting and launching operations on an international scale requires close coordination of activities across multiple jurisdictions and consumes significant management resources. If we fail to coordinate and manage these activities effectively, including the risks noted below, our business, financial condition, or results of operations could be adversely affected. We have sales offices located internationally throughout Europe, the Asia-Pacific region, and Brazil, as well as manufacturing and research facilities in Singapore and the United Kingdom. Shipments to customers outside the United States comprised 48%, 47%, and 45% of our total revenue in 2019, 2018, and 2017, respectively.

We are subject to the following risks and challenges associated with conducting business globally, particularly in emerging international markets, where we expect a growing proportion of our business to be located:

- longer payment cycles and difficulties in collecting accounts receivable outside of the United States;
- longer sales cycles due to the volume of transactions taking place through public tenders;
- challenges in staffing and managing foreign operations;
- tariffs and other trade barriers;
- lack of consistency, and unexpected changes, in legislative or regulatory requirements of foreign countries into which we sell our products;
- increased risk of governmental and regulatory scrutiny and investigations;
- the burden of complying with a wide variety of foreign laws, regulations, and legal standards;

- operating in locations with a higher incidence of corruption and fraudulent business practices;
- import and export requirements, tariffs, taxes, and other trade barriers;
- weak or no protection of intellectual property rights;
- possible enactment of laws regarding the management of and access to data and public networks and websites;
- potential negative impact of a global health crisis, such as the outbreak of a serious infectious disease, to our commercial or manufacturing operations, including the loss of productivity from our own workforce and consequences of any restrictions on the movement of people or materials;
- possible future limitations on foreign-owned businesses;
- significant taxes; and
- other factors beyond our control, including political, social and economic instability, and security concerns in general.

Additionally, we must comply with complex foreign and U.S. laws and regulations, such as the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act, and other local laws prohibiting corrupt payments to governmental officials, anti-competition regulations and sanctions imposed by the U.S. Office of Foreign Assets Control and other similar laws and regulations. Violations of these laws and regulations could result in fines and penalties, criminal sanctions, restrictions on our business conduct and on our ability to offer our products in one or more countries, and could also materially affect our brand, our ability to attract and retain employees, our international operations, our business and our operating results. Although we have implemented policies and procedures designed to ensure compliance with these laws and regulations, there can be no assurance that our employees, contractors, or agents will not violate our policies.

As we continue to expand our business into multiple international markets, our success will depend, in large part, on our ability to anticipate and effectively manage these and other risks associated with our international operations. Any of these risks could harm our international operations and negatively impact our sales, adversely affecting our business, results of operations, financial condition and growth prospects.

We are exposed to risks associated with transactions denominated in foreign currency.

During 2019, nearly half of our international sales were denominated in foreign currencies while the majority of our purchases of raw materials were denominated in U.S. dollars. Changes in the value of the relevant currencies may affect the cost of certain items required in our operations. Changes in currency exchange rates may also affect the relative prices at which we are able to sell products in the same market. Our revenues from international customers may be negatively impacted as increases in the U.S. dollar relative to our international customers local currency could make our products more expensive, impacting our ability to compete. Our costs of materials from international suppliers may increase if, in order to continue doing business with us, they raise their prices as the value of the U.S. dollar decreases relative to their local currency. Foreign policies and actions regarding currency valuation could result in actions by the United States and other countries to offset the effects of such fluctuations. Recent global financial conditions have led to a high level of volatility in foreign currency exchange rates and that level of volatility may continue, which could adversely affect our business, financial condition, or results of operations.

Significant developments stemming from the U.S. administration or the U.K.'s referendum on membership in the EU could have an adverse effect on us.

The U.S. administration has called for substantial changes to trade agreements and is imposing significant increases on tariffs on goods imported into the United States. Changes in U.S. or foreign political, regulatory and economic conditions or laws and policies governing foreign trade, manufacturing, and development and investment in the territories and countries where we or our customers operate could adversely affect our operating results and our business. The prospect of such changes has already affected, and may continue to affect, the timing of customer purchases.

Additionally, on June 23, 2016, the United Kingdom held a referendum and voted in favor of leaving the European Union, or EU. This referendum has created political and economic uncertainty, particularly in the United Kingdom and the EU. Our business could be affected as the United Kingdom and the EU negotiate the United Kingdom's exit from the EU and adopt and implement new trade agreements. In addition, our business could be negatively affected by new trade agreements between the United Kingdom and other countries, including the United States, and by the possible imposition of trade or other regulatory barriers in the United Kingdom. These possible negative impacts, and others resulting from the United Kingdom's actual or threatened withdrawal from the EU, may adversely affect our operating results and our customers' businesses.

We are subject to risks related to taxation in multiple jurisdictions.

We are subject to income taxes in both the United States and numerous foreign jurisdictions. Significant judgments based on interpretations of existing tax laws or regulations are required in determining the provision for income taxes. Our effective income tax rate could be adversely affected by various factors, including, but not limited to, changes in the mix of earnings in tax jurisdictions with different statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in existing tax policies, laws, regulations, or rates, changes in the level of non-deductible expenses (including share-based compensation), location of operations, changes in our future levels of research and development spending, mergers and acquisitions, or the result of examinations by various tax authorities. Although we believe our tax estimates are reasonable, if the U.S. Internal Revenue Service or other taxing authority disagrees with the positions taken on our tax returns, we could have additional tax liability, including interest and penalties. If material, payment of such additional amounts upon final adjudication of any disputes could have a material impact on our results of operations and financial position.

Our operating results may vary significantly from period to period, and we may not be able to sustain operating profitability.

Our revenue is subject to fluctuations due to the timing of sales of high-value products and services, the effects of new product launches and related promotions, the timing and availability of our customers' funding, the impact of seasonal spending patterns, the timing and size of research projects our customers perform, changes in overall spending levels in the life sciences industry, and other unpredictable factors that may affect customer ordering patterns. In particular, collaboration agreements and large-scale government funded projects such as population genomic projects are the result of lengthy and complex negotiations, and the timing of revenue recognition in connection with these agreements and projects may be subject to significant uncertainty because of the long-term nature of development and collaboration projects, as well as sample availability for population genomics projects.

Given the difficulty in predicting the timing and magnitude of sales for our products and services, we may experience quarter-to-quarter fluctuations in revenue resulting in the potential for a sequential decline in quarterly revenue. While we anticipate future growth, there is some uncertainty as to the timing of revenue on a quarterly basis. This is because a substantial portion of our quarterly revenue is typically recognized in the last month of a quarter and because the pattern for revenue generation during that month is normally not linear, with a concentration of orders in the final weeks of the quarter. In light of that, our manufacturing and shipping operations may experience increased pressure and demand during the time period shortly before the end of a fiscal quarter; delays related to our manufacturing and shipping operations during this time period could delay the recognition of revenue.

A large portion of our expenses are relatively fixed, including expenses for facilities, equipment, and personnel. To meet the anticipated growth in our business, we may incur fixed expenses, such as costs related to facility expansions, before we generate revenue sufficient to fully support such expenses. In addition, we expect operating expenses to continue to increase in absolute dollars to support our anticipated growth. Accordingly, our ability to sustain profitability will depend in part on the rate of growth, if any, of our revenue and on the level of our expenses, and if revenue does not grow as anticipated, we may not be able to maintain annual or quarterly profitability. Any significant delays in the commercial launch of our products, unfavorable sales trends in our existing product lines, or impacts from the other factors mentioned above, could adversely affect our future revenue growth or cause a sequential decline in quarterly revenue. In addition, non-cash share-based compensation expense and expenses related to prior and future acquisitions are also likely to continue to adversely affect our future profitability. Due to the possibility of significant fluctuations in our revenue and expenses, particularly from quarter to quarter, we believe that quarterly comparisons of our operating results are not a good indication of our future performance.

If our operating results fluctuate or do not meet the expectations of stock market analysts and investors, our stock price could decline.

From time to time, we receive large orders that have a significant effect on our operating results in the period in which the order is recognized as revenue. The timing of such orders is difficult to predict, and the timing of revenue recognition from such orders may affect period-to-period changes in net sales. As a result, our operating results could vary materially from quarter-to-quarter based on the receipt of such orders and their ultimate recognition as revenue.

We may not be able to convert our order backlog into revenue.

Our backlog consists of orders believed to be firm as of the balance sheet date. However, we may allow customers to make product substitutions as we launch new products. We may not receive revenue from some of these orders, and the order backlog we report may not be indicative of our future revenue. Many events can cause an order to be delayed or not completed at all, some of which may be out of our control. If we delay fulfilling customer orders, or if customers reconsider their orders, those customers may seek to cancel or modify their orders with us. Customers may otherwise seek to cancel or delay their orders even if we are prepared to fulfill them. If our orders in backlog do not result in sales, our operating results may suffer.

Disruption of critical information technology systems or material breaches in the security of our systems could have an adverse effect on our operations, business, customer relations, and financial condition.

Information technology (IT) systems help us operate efficiently, interface with customers, maintain financial accuracy and efficiency, and accurately produce our consolidated financial statements. IT systems are used extensively in virtually all aspects of our business, including product manufacturing and supply chain, sales forecast, order fulfillment and billing, customer service, logistics, and management of financial reports and data. Our success depends, in part, on the continued and uninterrupted performance of our IT systems. IT systems may be vulnerable to damage from a variety of sources, including telecommunications or network failures, power loss, natural disasters, human acts, terrorist attacks, computer viruses, computer denial-of-service attacks, unauthorized access to customer or employee data or company trade secrets, and other attempts to harm our systems. Certain of our systems are not redundant, and our disaster recovery planning is not sufficient for every eventuality. Despite any precautions we may take, such problems could result in, among other consequences, disruption of our operations, which could harm our reputation and financial results.

If we do not allocate and effectively manage the resources necessary to build and sustain the proper IT infrastructure, we could be subject to transaction errors, processing inefficiencies, the loss of customers, business disruptions, or the loss of or damage to intellectual property through security breach. If our data management systems do not effectively collect, store, process, and report relevant data for the operation of our business, whether due to equipment malfunction or constraints, software deficiencies, or human error, our ability to effectively plan, forecast, and execute our business plan and comply with applicable laws and regulations will be impaired. Any such impairment could adversely affect our reputation, financial condition, results of operations, cash flows, and the timeliness with which we report our internal and external operating results.

As we continuously adjust our workflow and business practices and add additional functionality to our enterprise resource planning software and other software applications, problems could arise that we have not foreseen, including interruptions in service, loss of data, or reduced functionality. Such problems could adversely impact our ability to provide quotes, take customer orders, and otherwise run our business in a timely manner. In addition, if our new systems fail to provide accurate and increased visibility into pricing and cost structures, it may be difficult to improve or maximize our profit margins. As a result, our results of operations and cash flows could be adversely affected.

Changes in accounting standards and subjective assumptions, estimates, and judgments by management related to complex accounting matters could significantly affect our financial results or financial condition.

Generally accepted accounting principles and related accounting pronouncements, implementation guidelines, and interpretations with regard to a wide range of matters that are relevant to our business, such as revenue recognition, asset impairment and fair value determinations, inventories, business combinations and intangible asset valuations, and litigation, are highly complex and involve many subjective assumptions, estimates, and

judgments. Changes in these rules or their interpretation or changes in underlying assumptions, estimates, or judgments could significantly change our reported or expected financial performance or financial condition.

Ethical, legal, and social concerns related to the use of genetic information could reduce demand for our products or services.

Our products may be used to provide genetic information about humans, agricultural crops, other food sources, and other living organisms. The information obtained from our products could be used in a variety of applications, which may have underlying ethical, legal, and social concerns regarding privacy and the appropriate uses of the resulting information, including preimplantation genetic screening of embryos, prenatal genetic testing, genetic engineering or modification of agricultural products, or testing genetic predisposition for certain medical conditions, particularly for those that have no known cure. Our customers' implementation of our products to provide their own products and services may raise such concerns and affect our own reputation. U.S. and international governmental authorities could, for social or other purposes, call for limits on or regulation of the use of genetic testing or prohibit testing for genetic predisposition to certain conditions, particularly for those that have no known cure. Similarly, such concerns may lead individuals to refuse to use genetics tests, even if permissible. These and other ethical, legal, and social concerns about genetic testing may limit market acceptance of our technology for certain applications or reduce the potential markets for our technology, either of which could have an adverse effect on our business, financial condition, or results of operations.

Conversion of our outstanding convertible notes may result in losses.

As of December 29, 2019, we had $517 million aggregate principal amount of convertible notes due 2021 and $750 million aggregate principle amount of convertible notes due 2023 outstanding. The notes are convertible into cash, and if applicable, shares of our common stock under certain circumstances, including trading price conditions related to our common stock. Upon conversion, we are required to record a gain or loss for the difference between the fair value of the notes to be extinguished and their corresponding net carrying value. The fair value of the notes to be extinguished depends on our current incremental borrowing rate. The net carrying value of our notes has an implicit interest rate of 3.5% with respect to convertible notes due 2021 and 3.7% with respect to convertible notes due 2023. If our incremental borrowing rate at the time of conversion is lower than the implied interest rate of the notes, we will record a loss in our consolidated statement of income during the period in which the notes are converted.

Our Certificate of Incorporation and Bylaws include anti-takeover provisions that may make it difficult for another company to acquire control of us or limit the price investors might be willing to pay for our stock.

Certain provisions of our Certificate of Incorporation and Bylaws could delay the removal of incumbent directors and could make it more difficult to successfully complete a merger, tender offer, or proxy contest involving us. Our Certificate of Incorporation has provisions that give our Board the ability to issue preferred stock and determine the rights and designations of the preferred stock at any time without stockholder approval. The rights of the holders of our common stock will be subject to, and may be adversely affected by, the rights of the holders of any preferred stock that may be issued in the future. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from acquiring, a majority of our outstanding voting stock. In addition, the staggered terms of our board of directors could have the effect of delaying or deferring a change in control.

In addition, certain provisions of the Delaware General Corporation Law (DGCL), including Section 203 of the DGCL, may have the effect of delaying or preventing changes in the control or management of Illumina. Section 203 of the DGCL provides, with certain exceptions, for waiting periods applicable to business combinations with stockholders owning at least 15% and less than 85% of the voting stock (exclusive of stock held by directors, officers, and employee plans) of a company.

The above factors may have the effect of deterring hostile takeovers or otherwise delaying or preventing changes in the control or management of Illumina, including transactions in which our stockholders might otherwise receive a premium over the fair market value of our common stock.

LEGAL PROCEEDINGS

See discussion of legal proceedings in note "8. Legal Proceedings" within the Consolidated Financial Statements section of this report, which is incorporated by reference herein.

SELECTED FINANCIAL DATA

The following tables set forth selected consolidated financial data for each of our last five fiscal years. This information should be read in conjunction with the consolidated financial statements and notes thereto included in the Consolidated Financial Statements section of this report.

Statement of Income Data

	Years Ended				
(In millions, except per share data)	December 29, 2019 (52 weeks)	December 30, 2018 (52 weeks)	December 31, 2017 (52 weeks)	January 1, 2017 (52 weeks)	January 3, 2016 (53 weeks)
Total revenue	**$ 3,543**	$ 3,333	$ 2,752	$ 2,398	$ 2,220
Income from operations	**$ 985**	$ 883	$ 606	$ 587	$ 613
Consolidated net income	**$ 990**	$ 782	$ 678	$ 428	$ 458
Net income attributable to Illumina stockholders	**$ 1,002**	$ 826	$ 726	$ 463	$ 462
Net income attributable to Illumina stockholders for earnings per share	**$ 1,002**	$ 826	$ 725	$ 454	$ 462
Earnings per share attributable to Illumina stockholders:					
Basic	**$ 6.81**	$ 5.63	$ 4.96	$ 3.09	$ 3.19
Diluted	**$ 6.74**	$ 5.56	$ 4.92	$ 3.07	$ 3.10
Shares used in computing earnings per share:					
Basic	**147**	147	146	147	145
Diluted	**149**	149	148	148	149

Certain amounts may not recalculate using the rounded amounts provided.

Balance Sheet Data

	December 29, 2019	December 30, 2018	December 31, 2017	January 1, 2017	January 3, 2016
In millions					
Cash, cash equivalents and short-term investments	**$ 3,414**	$ 3,512	$ 2,145	$ 1,559	$ 1,386
Total assets	**$ 7,316**	$ 6,959	$ 5,257	$ 4,281	$ 3,688
Short-term debt	**—**	$ 1,107	$ 10	$ 2	$ 75
Long-term debt	**$ 1,141**	$ 890	$ 1,182	$ 1,056	$ 1,016
Redeemable noncontrolling interests	**—**	$ 61	$ 220	$ 44	$ 33
Total stockholders' equity	**$ 4,613**	$ 3,845	$ 2,749	$ 2,270	$ 1,849

MARKET INFORMATION

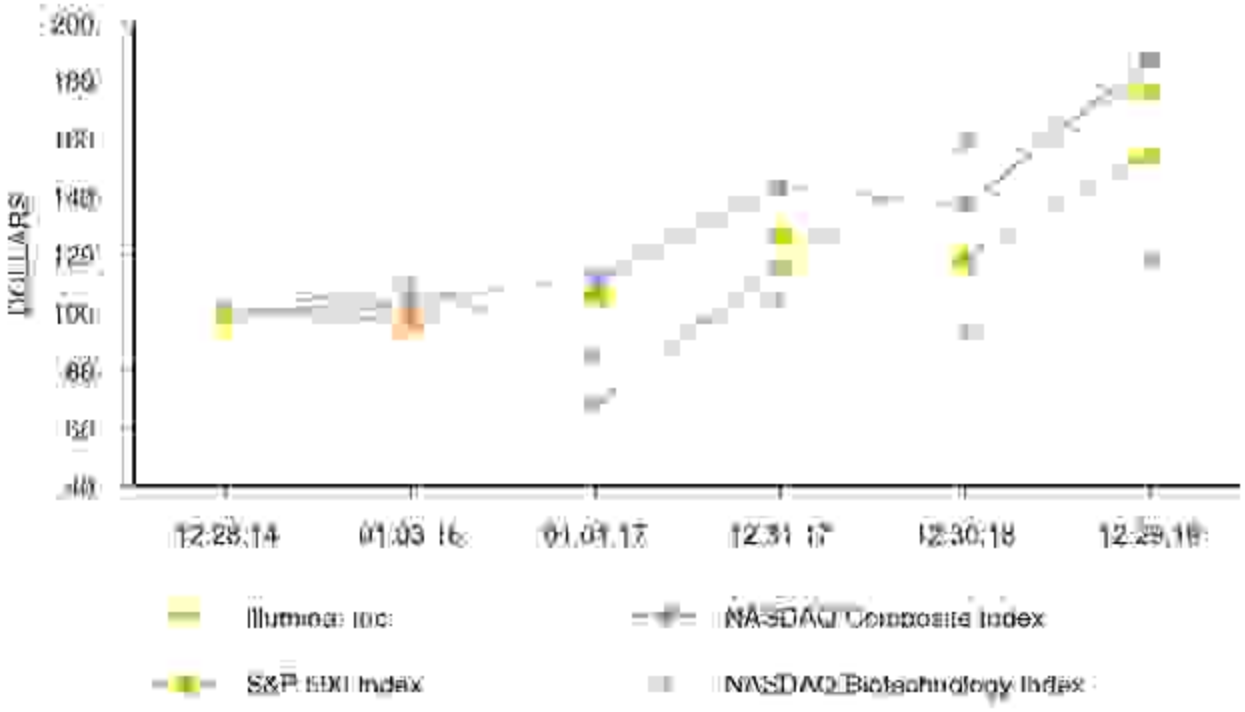
Our common stock has been quoted on The NASDAQ Global Select Market under the symbol "ILMN" since July 28, 2000. Prior to that time, there was no public market for our common stock. The following table sets forth, for the fiscal periods indicated, the quarterly high and low sales prices per share of our common stock as reported on The NASDAQ Global Select Market.

	2019		2018	
	High	Low	High	Low
First Quarter	**$ 322.32**	**$ 268.62**	$ 256.64	$ 207.51
Second Quarter	**$ 369.00**	**$ 300.35**	$ 293.15	$ 225.82
Third Quarter	**$ 380.76**	**$ 263.30**	$ 372.61	$ 274.66
Fourth Quarter	**$ 336.63**	**$ 279.76**	$ 371.91	$ 271.00

Stock Performance Graph

The graph below compares the cumulative total stockholder returns on our common stock for the last five fiscal years with the cumulative total stockholder returns on the NASDAQ Composite Index, the NASDAQ Biotechnology Index, and the S&P 500 Index for the same period. The graph assumes that $100 was invested on December 28, 2014 in our common stock and in each index and that all dividends were reinvested. No cash dividends have been declared on our common stock. Stockholder returns over the indicated period should not be considered indicative of future stockholder returns.

Compare 5-Year Cumulative Total Return among Illumina, NASDAQ Composite Index, NASDAQ Biotechnology Index, and S&P 500 Index



Holders

As of February 7, 2020, we had 128 record holders of our common stock.

Dividends

We have never paid cash dividends and have no present intention to pay cash dividends in the foreseeable future. The indentures for our convertible senior notes due in 2021 and 2023, which are convertible into cash and, in certain circumstances, shares of our common stock, require us to increase the conversion rate applicable to the notes if we pay any cash dividends.

SHARE REPURCHASES AND SALES

Purchases of Equity Securities by the Issuer

On February 6, 2019, our Board of Directors authorized a share repurchase program, which superseded all prior and available repurchase authorizations, to repurchase $550 million of outstanding common stock. The repurchases may be completed under a 10b5-1 plan or at management's discretion. Shares repurchased in open-market transactions pursuant to this program during 2019 were as follows:

In thousands, except price per share	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Programs
First Quarter	210	$ 297.38	210	$ 487,500
Second Quarter	—	—	—	$ 487,500
Third Quarter	687	$ 289.47	687	$ 288,756
Fourth Quarter **(1)**	208	$ 300.03	208	$ 226,200
Total	1,105	$ 292.97	1,105	$ 226,200

(1) Repurchases during the fourth quarter of 2019 were as follows:

In thousands, except price per share	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Programs
September 30, 2019 - October 27, 2019	—	—	—	$ 288,756
October 28, 2019 - November 24, 2019	208	$ 300.03	208	$ 226,200
November 25, 2019 - December 29, 2019	—	—	—	$ 226,200
Total	208	$ 300.03	208	$ 226,200

Sales of Unregistered Securities

There were no sales of unregistered securities in 2019.

MANAGEMENT'S DISCUSSION & ANALYSIS

Our Management's Discussion and Analysis (MD&A) will help readers understand our results of operations, financial condition, and cash flow. It is provided in addition to the accompanying consolidated financial statements and notes. This MD&A is organized as follows:

- *Management's Overview and Outlook*. High level discussion of our operating results and significant known trends that affect our business.
- *Results of Operations*. Detailed discussion of our revenues and expenses.
- *Liquidity and Capital Resources*. Discussion of key aspects of our consolidated statements of cash flows, changes in our financial position, and our financial commitments.
- *Contractual Obligations.* Tabular disclosure of known contractual obligations as of December 29, 2019.
- *Critical Accounting Policies and Estimates*. Discussion of significant changes we believe are important to understanding the assumptions and judgments underlying our consolidated financial statements.
- *Quantitative and Qualitative Disclosure about Market Risk*. Discussion of our financial instruments' exposure to market risk.
- *Recent Accounting Pronouncements. S*ummary of recent accounting pronouncements applicable to our consolidated financial statements.
- *Off-Balance Sheet Arrangements*. We have no off-balance sheet arrangements.

Our discussion of our results of operations, financial condition, and cash flow for 2017 can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" within our filing of Form 10-K for the fiscal year ended 2017.

This MD&A discussion contains forward-looking statements that involve risks and uncertainties. See "Special Note Regarding Forward-Looking Statements" preceding the Business & Market Overview section of this report for additional factors relating to such statements. See "Risk Factors" within the Business & Market Information section of this report for a discussion of certain risk factors applicable to our business, financial condition, and results of operations. Operating results are not necessarily indicative of results that may occur in future periods.

MANAGEMENT'S OVERVIEW AND OUTLOOK

This overview and outlook provides a high-level discussion of our operating results and significant known trends that affect our business. We believe that an understanding of these trends is important to understanding our financial results for the periods being reported herein as well as our future financial performance. This summary is not intended to be exhaustive, nor is it intended to be a substitute for the detailed discussion and analysis provided elsewhere in this report.

About Illumina

We have one reportable segment, Core Illumina, which relates to Illumina's core operations. Prior to the Helix deconsolidation on April 25, 2019, our reportable segments included both Core Illumina and Helix. Prior to the deconsolidation of GRAIL on February 28, 2017, our Consolidated VIEs reportable segment included the combined operations of Helix and GRAIL. For information on Helix and GRAIL, refer to note "3. Investments and Fair Value Measurements" and note "11. Segments and Geographic Data" within the Consolidated Financial Statements section of this report.

Our focus on innovation has established us as the global leader in DNA sequencing and array-based technologies, serving customers in the research, clinical and applied markets. Our products are used for applications in the life sciences, oncology, reproductive health, agriculture and other emerging segments.

Our customers include leading genomic research centers, academic institutions, government laboratories, and hospitals, as well as pharmaceutical, biotechnology, commercial molecular diagnostic laboratories, and consumer genomics companies.

Our comprehensive line of products addresses the scale of experimentation and breadth of functional analysis to advance disease research, drug development, and the development of molecular tests. This portfolio of leading-edge sequencing and array-based solutions addresses a range of genomic complexity and throughput, enabling researchers and clinical practitioners to select the best solution for their scientific challenge.

Our financial results have been, and will continue to be, impacted by several significant trends, which are described below. While these trends are important to understanding and evaluating our financial results, this discussion should be read in conjunction with our consolidated financial statements and the notes thereto within the Consolidated Financial Statements section of this report, and the other transactions, events, and trends discussed in "Risk Factors" within the Business & Market Information section of this report.

Financial Overview

Consolidated financial highlights include the following:

- Revenue increased 6% in 2019 to $3.5 billion compared to $3.3 billion in 2018 primarily due to increased sequencing consumables revenue and revenue from development and licensing agreements, partially offset by a decline in microarray revenue due to weakness in the direct-to-consumer (DTC) market. We expect our revenue to continue to increase in 2020, although we anticipate ongoing weakness in the DTC market. We are continuing to monitor and assess the effects of the coronavirus outbreak on our commercial and manufacturing operations, including any impact on our revenue in 2020.

- Gross profit as a percentage of revenue (gross margin) was 69.6% in 2019 compared to 69.0% in 2018. The gross margin increase was driven primarily by an increase in revenue from development and licensing agreements as well as an increase in sequencing consumables as a percentage of total revenue, which generate higher gross margins, partially offset by lower average selling prices on instruments and consumables and lower volumes in our service business. Our gross margin in future periods will depend on several factors, including: market conditions that may impact our pricing; sales mix changes among consumables, instruments, services, and development and licensing revenue; product mix changes between established products and new products; excess and obsolete inventories; royalties; our cost structure for manufacturing operations relative to volume; and product support obligations.

- Income from operations as a percentage of revenue increased to 27.8% in 2019 compared to 26.5% in 2018 primarily due to increased revenue, improved gross margins, and a decrease in operating expenses as a percentage of revenue. We expect our operating expenses to continue to grow on an absolute basis in 2020.

- Our effective tax rate was 11.4% and 12.5% in 2019 and 2018, respectively. In 2019, the variance from the U.S. federal statutory tax rate of 21% was primarily attributable to the mix of earnings in jurisdictions with lower statutory tax rates than the U.S. federal statutory tax rate, such as in Singapore and the United Kingdom, discrete tax benefits related to uncertain tax positions, and tax benefits related to share-based compensation.

  Our future effective tax rate may vary from the U.S. federal statutory tax rate due to the mix of earnings in tax jurisdictions with different statutory tax rates and the other factors discussed in the risk factor "We are subject to risks related to taxation in multiple jurisdictions" in "Risk Factors" within the Business & Market Information section of this report. As a result of the U.S. Court of Appeals for the Ninth Circuit decision on June 7, 2019 to overturn a U.S. Tax Court opinion provided in Q3 2015 that stock compensation should be excluded from cost sharing charges, we anticipate our effective tax rate may be adversely impacted. The final resolution of this case is uncertain, but if it is determined that the outcome of this decision is more likely than not, a discrete tax expense of up to $30 million could be recorded. Excluding this item, we anticipate that our future effective tax rate will remain lower than the

U.S. federal statutory tax rate of 21% due to the portion of our earnings that will be subject to lower statutory tax rates.

- We ended 2019 with cash, cash equivalents, and short-term investments totaling $3.4 billion, of which approximately $547 million was held by our foreign subsidiaries.

RESULTS OF OPERATIONS

To enhance comparability, the following table sets forth audited consolidated statement of operations data for 2019, 2018, and 2017, stated as a percentage of total revenue.

	2019	2018	2017
Revenue:			
Product revenue	**82.7 %**	82.5 %	83.2 %
Service and other revenue	**17.3**	17.5	16.8
Total revenue	**100.0**	100.0	100.0
Cost of revenue:			
Cost of product revenue	**22.6**	22.1	24.7
Cost of service and other revenue	**6.8**	7.8	7.6
Amortization of acquired intangible assets	**1.0**	1.1	1.3
Total cost of revenue	**30.4**	31.0	33.6
Gross profit	**69.6**	69.0	66.4
Operating expense:			
Research and development	**18.3**	18.7	19.8
Selling, general and administrative	**23.5**	23.8	24.6
Total operating expense	**41.8**	42.5	44.4
Income from operations	**27.8**	26.5	22.0
Other income (expense):			
Interest income	**2.1**	1.3	0.7
Interest expense	**(1.5)**	(1.7)	(1.3)
Other income, net	**3.2**	0.7	16.5
Total other income, net	**3.8**	0.3	15.9
Income before income taxes	**31.6**	26.8	37.9
Provision for income taxes	**3.6**	3.3	13.3
Consolidated net income	**28.0**	23.5	24.6
Add: Net loss attributable to noncontrolling interests	**0.3**	1.3	1.8
Net income attributable to Illumina stockholders	**28.3 %**	24.8 %	26.4 %

Percentages may not recalculate due to rounding.

Revenue

	2019 - 2018				2018 - 2017		
(Dollars in millions)	2019	2018	Change	% Change	2017	Change	% Change
Consumables	**$ 2,392**	$ 2,177	$ 215	10 %	$ 1,771	$ 406	23%
Instruments	**537**	572	(35)	(6)	518	54	10
Total product revenue	**2,929**	2,749	180	7	2,289	460	20
Service and other revenue	**614**	584	30	5	463	121	26
Total revenue	**$ 3,543**	$ 3,333	$ 210	6 %	$ 2,752	$ 581	21%

Service and other revenue consists primarily of revenue generated from genotyping and sequencing services, instrument service contracts, and development and licensing agreements. Total revenue primarily relates to Core Illumina for all periods presented.

2019 Compared to 2018

The increase in consumables revenue in 2019 was driven by a $251 million increase in sequencing consumables revenue, primarily due to growth in the instrument installed base. The increase in sequencing consumables revenue was partially offset by a decrease in microarray consumables revenue, primarily due to ongoing weakness in the direct-to-consumer (DTC) market. Instruments revenue decreased in 2019 primarily due to a lower average selling price for our NovaSeq instrument compared to its historic range as well as fewer shipments of our microarray instruments. These decreases were partially offset by increased shipments of our NextSeq instruments in 2019. Service and other revenue increased in 2019 primarily due to increased revenue from development and licensing agreements, partially offset by decreased revenue from sequencing and genotyping services.

2018 Compared to 2017

The increase in consumables revenue in 2018 was primarily due to a $340 million increase in sequencing consumables revenue driven primarily by growth in the instrument installed base. Instruments revenue increased in 2018 primarily due to a $48 million increase in sequencing instruments revenue driven by increased shipments of our NovaSeq and NextSeq instruments, partially offset by fewer shipments of our HiSeq instrument. Service and other revenue increased in 2018 as a result of increased revenue from sequencing services, development agreements, and genotyping services.

Gross Margin

	2019 - 2018				2018 - 2017		
(Dollars in millions)	2019	2018	Change	% Change	2017	Change	% Change
Gross profit	**$ 2,467**	$ 2,300	$ 167	7%	$ 1,826	$ 474	26%
Gross margin	**69.6%**	69.0%			66.4%		

2019 Compared to 2018

The gross margin increase in 2019 was driven primarily by an increase in revenue from development and licensing agreements as well as an increase in sequencing consumables as a percentage of total revenue, which generate higher gross margins, partially offset by lower average selling prices on instruments and consumables and lower volumes in our service business.

2018 Compared to 2017

The gross margin increase in 2018 was driven primarily by an increase in consumables as a percentage of total revenue, which generate higher gross margins, and an $18 million impairment of an acquired intangible asset and inventory reserves related to product transitions that were recorded in 2017.

Operating Expense

	2019 - 2018				2018 - 2017		
(Dollars in millions)	2019	2018	Change	% Change	2017	Change	% Change
Research and development	**$ 647**	$ 623	$ 24	4%	$ 546	$ 77	14%
Selling, general and administrative	**835**	794	41	5	674	120	18
Total operating expense	**$ 1,482**	$ 1,417	$ 65	5%	$ 1,220	$ 197	16%

2019 Compared to 2018

Core Illumina R&D expense increased by $43 million, or 7%, primarily due to increased headcount, as we continue to invest in the research and development of new products and enhancements to existing products, partially offset by a decrease in performance-based compensation. Helix R&D expense decreased by $19 million, primarily due to its deconsolidation on April 25, 2019.

Core Illumina SG&A expense increased by $73 million, or 10%, primarily due to increased headcount and investments in facilities to support the continued growth and scale of our operations, and $43 million in expenses related to the Pacific Biosciences acquisition, which was terminated on January 2, 2020, partially offset by a decrease in performance-based compensation. Helix SG&A expense decreased by $32 million, primarily due to its deconsolidation on April 25, 2019.

2018 Compared to 2017

Core Illumina R&D expense increased by $78 million, or 15%, primarily due to increased headcount, as we continue to invest in the research and development of new products and enhancements to existing products, and an increase in performance-based compensation. R&D expense of our Consolidated VIEs decreased by $1 million, primarily due to the deconsolidation of GRAIL in Q1 2017, partially offset by the growth in Helix's operations.

Core Illumina SG&A expense increased by $125 million, or 20%, primarily due to increased headcount and investments in facilities to support the continued growth and scale of our operations, and an increase in performance-based compensation. SG&A expense of our Consolidated VIEs decreased by $5 million primarily due to the deconsolidation of GRAIL in Q1 2017, partially offset by the growth of Helix's operations.

Other Income, Net

	2019 - 2018				2018 - 2017		
(Dollars in millions)	**2019**	**2018**	**Change**	**% Change**	**2017**	**Change**	**% Change**
Interest income	**$ 75**	$ 44	$ 31	70 %	$ 19	$ 25	132 %
Interest expense	**(52)**	(57)	5	(9)	(37)	(20)	54
Other income, net	**110**	24	86	358	455	(431)	(95)
Total other income, net	**$ 133**	$ 11	$ 122	1,109 %	$ 437	$ (426)	(97)%

Other income, net primarily relates to Core Illumina for all periods presented.

2019 Compared to 2018

Interest income increased in 2019 compared to 2018 as a result of higher cash and cash-equivalent balances and yields on our short-term debt securities. Interest expense consisted primarily of accretion of discount on our convertible senior notes. The increase in other income, net, in 2019, was primarily due to mark-to-market adjustments on our strategic investments in marketable equity securities. Additionally, in 2019, we recorded a $39 million gain related to the deconsolidation of Helix and a $15 million gain from the settlement of a contingency related to the deconsolidation of GRAIL in 2017.

2018 Compared to 2017

Interest income increased in 2018 compared to 2017 as a result of higher yields on our short-term debt securities and higher cash and cash-equivalent balances. Interest expense consisted primarily of accretion of discount on our convertible senior notes and interest recorded on our financing obligations related to our build-to-suit properties. Other income, net, in 2018, consisted primarily of mark-to-market adjustments and impairments from our strategic investments. Other income, net decreased in 2018 primarily due to a $453 million gain recorded on the deconsolidation of GRAIL in 2017.

Provision for Income Taxes

	2019 - 2018				2018 - 2017		
(Dollars in millions)	2019	2018	Change	% Change	2017	Change	% Change
Income before income taxes	**$ 1,118**	$ 894	$ 224	25%	$ 1,043	$ (149)	(14)%
Provision for income taxes	**128**	112	16	14	365	(253)	(69)
Consolidated net income	**$ 990**	$ 782	$ 208	27%	$ 678	$ 104	15 %
Effective tax rate	**11.4%**	12.5%			35.0%		

2019 Compared to 2018

In 2019, the variance from the U.S. federal statutory rate of 21% was primarily attributable to the mix of earnings in jurisdictions with lower statutory tax rates than the U.S. federal statutory tax rate, such as in Singapore and the United Kingdom, discrete tax benefits related to uncertain tax positions, and tax benefits related to share-based compensation. In 2018, the variance from the U.S. federal statutory rate of 21% was primarily attributable to the mix of earnings in jurisdictions with lower statutory tax rates than the U.S. federal statutory tax rate, such as in Singapore and the United Kingdom, and tax benefits related to share-based compensation, offset partially by the $11 million tax expense associated with updating prior year estimates of the impact of U.S. Tax Reform.

2018 Compared to 2017

In 2018, the U.S. federal statutory rate was reduced from 35% to 21%. In 2018, the variance from the U.S. federal statutory rate of 21% was primarily attributable to the mix of earnings in jurisdictions with lower statutory tax rates than the U.S. federal statutory tax rate, such as in Singapore and the United Kingdom, and tax benefits related to share-based compensation, offset partially by the $11 million tax expense associated with updating prior year estimates of the impact of U.S. Tax Reform. In 2017, the effective tax rate was primarily attributable to the mix of earnings in jurisdictions with lower statutory rates from the U.S. federal statutory rate, such as in Singapore and the United Kingdom, and tax benefits related to share-based compensation. Such impacts were offset primarily by the provisional estimated impact of U.S. Tax Reform of $150 million. The impact of U.S. Tax Reform primarily represented our provisional estimate of the one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred, and the impact of revaluing our U.S. deferred tax assets and liabilities based on the statutory rates at which they are expected to be recognized in the future, which for federal purposes was reduced from 35% to 21%.

LIQUIDITY AND CAPITAL RESOURCES

At December 29, 2019, we had approximately $2.0 billion in cash and cash equivalents, of which approximately $547 million was held by our foreign subsidiaries. Cash and cash equivalents increased by $898 million from last year due to the factors described in the “Cash Flow Summary” below. Our primary source of liquidity, other than our holdings of cash, cash equivalents, and investments, has been cash flows from operations and, from time to time, issuances of debt. Our ability to generate cash from operations provides us with the financial flexibility we need to meet operating, investing, and financing needs. It is our intention to indefinitely reinvest the historical earnings of our foreign subsidiaries generated prior to 2017. As of December 29, 2019, we asserted that $331 million of foreign earnings would not be indefinitely reinvested.

Historically, we have liquidated our short-term investments and/or issued debt and equity securities to finance our business needs as a supplement to cash provided by operating activities. As of December 29, 2019, we had $1.4 billion in short-term investments. Our short-term investments are predominantly comprised of marketable securities consisting of U.S government-sponsored entities, corporate debt securities, and U.S. Treasury securities.

Our 2019 Notes matured on June 15, 2019, by which time the $633 million in principal had been converted and was paid in cash. The excess of the conversion value over the principal amount was paid in shares of common stock. Our convertible senior notes due in 2021 and 2023 were not convertible as of December 29, 2019.

We made cash payments to Pacific Biosciences of California, Inc. (PacBio) totaling $18 million in 2019. Pursuant to the Termination Agreement, we made a cash payment to PacBio of $98 million on January 2, 2020, which represented the Reverse Termination Fee (as defined in the Merger Agreement). Additionally, we made cash payments of $6 million and $22 million on January 2, 2020 and February 3, 2020, respectively, and will make a cash payment of $6 million on or before March 2, 2020. These payments totaling $34 million, along with the $18 million of payments made in the fourth quarter of 2019, are collectively referred to as the Continuation Advances. See note "4. Intangible Assets, Goodwill, and Acquisitions" in the Consolidated Financial Statements section of this report for additional details.

We anticipate that our current cash, cash equivalents, and short-term investments, together with cash provided by operating activities, are sufficient to fund our near-term capital and operating needs for at least the next 12 months. Operating needs include the planned costs to operate our business, including amounts required to fund working capital and capital expenditures. Our primary short-term needs for capital, which are subject to change, include:

- support of commercialization efforts related to our current and future products;
- acquisitions of equipment and other fixed assets for use in our current and future manufacturing and research and development facilities;
- the continued advancement of research and development efforts;
- potential strategic acquisitions and investments;
- potential repayment of debt obligations;
- the expansion needs of our facilities, including costs of leasing and building out additional facilities; and
- repurchases of our outstanding common stock.

Authorizations to repurchase $226 million of our common stock remained available as of December 29, 2019. On February 5, 2020, our Board of Directors authorized a new share repurchase program, which superseded all prior and available repurchase authorizations, to repurchase $750 million of outstanding common stock. The repurchases may be completed under a 10b5-1 plan or at management's discretion.

We had $51 million and up to $160 million, respectively, remaining in our capital commitments to two venture capital investment funds as of December 29, 2019, that are callable through April 2026 and July 2029, respectively.

We expect that our revenue and the resulting operating income, as well as the status of each of our new product development programs, will significantly impact our cash management decisions.

Our future capital requirements and the adequacy of our available funds will depend on many factors, including:

- our ability to successfully commercialize and further develop our technologies and create innovative products in our markets;
- scientific progress in our research and development programs and the magnitude of those programs;
- competing technological and market developments; and
- the need to enter into collaborations with other companies or acquire other companies or technologies to enhance or complement our product and service offerings.

Cash Flow Summary

(In millions)	2019	2018	2017
Net cash provided by operating activities	**$ 1,051**	$ 1,142	$ 875
Net cash provided by (used in) investing activities	**745**	(1,813)	(214)
Net cash (used in) provided by financing activities	**(897)**	594	(176)
Effect of exchange rate changes on cash and cash equivalents	**(1)**	(4)	5
Net increase (decrease) in cash and cash equivalents	**$ 898**	$ (81)	$ 490

Operating Activities

Net cash provided by operating activities in 2019 primarily consisted of net income of $990 million plus net adjustments of $255 million, partially offset by net changes in operating assets and liabilities of $194 million. The primary non-cash adjustments to net income included share-based compensation of $194 million, depreciation and amortization expenses of $188 million, accretion of debt discount of $46 million, deferred income taxes of $11 million, and loss on Continuation Advances of $8 million, partially offset by payment of the accreted debt discount related to our 2019 Notes of $84 million, gains on deconsolidation of $54 million, and unrealized gains on marketable equity securities of $53 million. Cash flow impact from changes in net operating assets and liabilities were primarily driven by increases in accounts receivable, other assets, and prepaid expenses and decreases in accrued liabilities, accounts payable, and other long-term liabilities, partially offset by a decrease in inventory.

Net cash provided by operating activities in 2018 primarily consisted of net income of $782 million plus net adjustments of $378 million, partially offset by net changes in operating assets and liabilities of $18 million. The primary non-cash adjustments to net income included share-based compensation of $193 million, depreciation and amortization expenses of $179 million, accretion of debt discount of $41 million, partially offset by deferred income taxes of $18 million. Cash flow impact from changes in net operating assets and liabilities were primarily driven by increases in accounts receivable and inventory, partially offset by increases in accrued liabilities and accounts payable.

Investing Activities

Net cash provided by investing activities totaled $745 million in 2019. We purchased $1,010 million of available-for-sale securities and $2,016 million of our available-for-sale securities matured or were sold during the period. We received $15 million in proceeds from the settlement of a contingency related to the deconsolidation of GRAIL in 2017. We invested $209 million in capital expenditures, primarily associated with our investment in facilities and paid $20 million for strategic investments and $18 million to PacBio for Continuation Advances. We removed $29 million in cash from our balance sheet as a result of the deconsolidation of Helix.

Net cash used in investing activities totaled $1,813 million in 2018. We purchased $2,859 million of available-for-sale securities and $1,457 million of our available-for-sale securities matured or were sold during the period. We paid net cash of $100 million for acquisitions and $15 million for strategic investments. We also invested $296 million in capital expenditures, primarily associated with our investment in facilities.

Financing Activities

Net cash used in financing activities totaled $897 million in 2019. We used $550 million to repay financing obligations primarily related to our 2019 Notes, $324 million to repurchase our common stock, and $82 million to pay taxes related to net share settlement of equity awards. We received $59 million in proceeds from the issuance of common stock through the exercise of stock options and the sale of shares under our employee stock purchase plan.

Net cash provided by financing activities totaled $594 million in 2018. We received $735 million in proceeds from the issuance of $750 million in principal amount of our convertible senior notes due 2023, net of issuance costs. We also received $46 million in proceeds from the issuance of common stock through the exercise of stock options and the sale of shares under our employee stock purchase plan. We used $201 million to repurchase our common stock and $74 million to pay taxes related to net share settlement of equity awards. Contributions from noncontrolling interest owners were $92 million. Additionally, $4 million was used by Helix to repay financing obligations.

CONTRACTUAL OBLIGATIONS

Contractual obligations represent future cash commitments and liabilities under agreements with third parties and exclude orders for goods and services entered into in the normal course of business that are not enforceable or legally binding. The following table represents our contractual obligations as of December 29, 2019, aggregated by type:

	Payments Due by Period(1)				
In millions	**Total**	**Less Than 1 Year**	**1 – 3 Years**	**3 – 5 Years**	**More Than 5 Years**
Debt obligations(2)	**$ 1,271**	$ 2	$ 519	$ 750	$ —
Operating lease liabilities(3)	**970**	77	168	171	554
U.S. Tax Reform transition tax(4)	**87**	—	17	70	—
Amounts due under executive deferred compensation plan	**46**	46	—	—	—
Total	**$ 2,374**	$ 125	$ 704	$ 991	$ 554

(1) The table excludes $79 million of uncertain tax positions and $211 million of capital commitments for our venture capital investment funds, as the timing and amounts of settlement remained uncertain as of December 29, 2019. This table also excludes payments totaling $132 million due to PacBio associated with the termination of the merger agreement on January 2, 2020. See note "9. Income Taxes," note "7. Supplemental Balance Sheet Details," and note "3. Intangible Assets, Goodwill, and Acquisitions" in the Consolidated Financial Statements section of this report for additional information.

(2) Debt obligations include the principal amount of our convertible senior notes due 2021 and 2023, as well as interest payments to be made under the notes. Although these notes mature in 2021 and 2023, respectively, they may be converted into cash and shares of our common stock prior to maturity if certain conditions are met. Any conversion prior to maturity can result in repayments of the principal amounts sooner than the scheduled repayments as indicated in the table. See note "5. Debt and Other Commitments" in the Consolidated Financial Statements section of this report for further discussion.

(3) Operating lease liabilities exclude $44 million of legally binding minimum lease payments for leases signed but not yet commenced.

(4) U.S. Tax Reform transition tax includes the remaining portion of the one-time tax on earnings of certain foreign subsidiaries which we elected to pay in installments in accordance with the Tax Cuts and Jobs Act enacted on December 22, 2017.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of financial statements in accordance with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in our consolidated financial statements and accompanying notes. Management bases its estimates on historical experience, market and other conditions, and various other assumptions it believes to be reasonable. Although these estimates are based on management's best knowledge of current events and actions that may impact us in the future, the estimation process is, by its nature, uncertain given that estimates depend on events over which we may not have control. If market and other conditions change from those that we anticipate, our consolidated financial statements may be materially affected. In addition, if our assumptions change, we may need to revise our estimates, or take other corrective actions, either of which may also have a material effect on our consolidated financial statements.

We believe that the following critical accounting policies and estimates have a higher degree of inherent uncertainty and require our most significant judgments. In addition, had we used estimates different from any of these, our consolidated financial statements could have been materially different from those presented. Members of our senior management have discussed the development and selection of our critical accounting policies and estimates, and our disclosure regarding them, with the audit committee of our board of directors. Our accounting

policies are more fully described in note "1. Organization and Significant Accounting Policies" in the Consolidated Financial Statements section of this report.

Revenue Recognition

Our revenue is generated primarily from the sale of products and services. Product revenue primarily consists of sales of instruments and consumables used in genetic analysis. Service and other revenue primarily consists of revenue generated from genotyping and sequencing services, instrument service contracts, and development and licensing agreements.

We recognize revenue when control of our products and services is transferred to our customers in an amount that reflects the consideration we expect to receive from our customers 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. Revenue recognition for contracts with multiple deliverables is based on the separate satisfaction of each distinct performance obligation within the contract. 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. We consider a performance obligation satisfied once we have transferred control of a good or service to the customer, meaning the customer has the ability to use and obtain the benefit of the good or service. Most performance obligations are generally satisfied within a short time frame, approximately three to six months, after the contract execution date. The contract price is allocated to each performance obligation in proportion to its standalone selling price. We determine our best estimate of standalone selling price using average selling prices over a rolling 12-month period coupled with an assessment of current market conditions. If the product or service has no history of sales or if the sales volume is not sufficient, we rely upon prices set by management, adjusted for applicable discounts.

Revenue from product sales is recognized generally upon delivery to the end customer, which is when control of the product is deemed to be transferred. Invoicing typically occurs upon shipment and payment is typically due within 60 days from invoice. In instances where right of payment or transfer of title is contingent upon the customer's acceptance of the product, revenue is deferred until all acceptance criteria have been met. Revenue from genotyping and sequencing services is recognized when earned, which is generally at the time the genotyping or sequencing analysis data is made available to the customer. Revenue from instrument service contracts is recognized as the services are rendered, typically evenly over the contract term. Revenue from development and licensing agreements generally includes upfront and periodic licensing fees, contract research and development services, or payments for development and regulatory milestones. Revenue for these agreements is recognized when each distinct performance obligation is satisfied.

Revenue is recorded net of discounts, distributor commissions, and sales taxes collected on behalf of governmental authorities. Employee sales commissions are recorded as selling, general and administrative expenses when incurred as the amortization period for such costs, if capitalized, would have been one year or less.

In certain markets, products and services are sold to customers through distributors. In most sales through distributors, the product is delivered directly to customers by us. The terms of sales transactions through distributors are consistent with the terms of direct sales to customers.

Investments

We invest in various types of securities, including debt securities in government-sponsored entities, corporate debt securities, U.S. Treasury securities and equity securities. As of December 29, 2019, we had $1.4 billion in short-term investments. We classify our investments as Level 1, 2, or 3 within the fair value hierarchy. Fair values determined by Level 1 inputs utilize quoted prices (unadjusted) in active markets for identical assets that we have the ability to access. Fair values determined by Level 2 inputs utilize data points that are observable such as quoted prices, interest rates and yield curves. Fair values determined by Level 3 inputs utilize unobservable data points for the asset.

As discussed in note "3. Investments and Fair Value Measurements" in the Consolidated Financial Statements section of this report, almost half of our security holdings have been classified as Level 2. These securities have been initially valued at the transaction price and subsequently valued utilizing a third-party service provider who

assesses the fair value using inputs other than quoted prices that are observable either directly or indirectly, such as yield curve, volatility factors, credit spreads, default rates, loss severity, current market and contractual prices for the underlying instruments or debt, broker and dealer quotes, as well as other relevant economic measures. We perform certain procedures to corroborate the fair value of these holdings, and in the process, we apply judgment and estimates that if changed, could significantly affect our statement of financial positions.

Inventory Valuation

Inventory is stated at lower of cost or net realizable value. We regularly review inventory for excess and obsolete products and components, taking into account product life cycles, quality issues, historical experience, and usage forecasts. We record write-downs of inventory for potentially excess, obsolete, or impaired goods in order to state inventory at net realizable value. We make assumptions about future demand, market conditions, and the release of new products that may supersede old ones. However, if actual market conditions are less favorable than anticipated, additional inventory write-downs could be required.

Contingencies

We are involved in various lawsuits and claims arising in the ordinary course of business, including actions with respect to intellectual property, employment, and contractual matters. In connection with these matters, we assess, on a regular basis, the probability and range of possible loss based on the developments in these matters. A liability is recorded in the consolidated financial statements if it is believed to be probable that a loss has been incurred and the amount of the loss can be reasonably estimated. Because litigation is inherently unpredictable and unfavorable resolutions could occur, assessing contingencies is highly subjective and requires judgments about future events. We regularly review outstanding legal matters to determine the adequacy of the liabilities accrued and related disclosures in consideration of many factors, which include, but are not limited to, past history, scientific and other evidence, and the specifics and status of each matter. We may change our estimates if our assessment of the various factors changes and the amount of ultimate loss may differ from our estimates, resulting in a material effect on our business, financial condition, results of operations, and/or cash flows.

Intangible Assets and Other Long-Lived Assets — Impairment Assessments

We perform regular reviews to determine if the carrying values of our long-lived assets are impaired. A review of identifiable intangible assets and other long-lived assets is performed when an event occurs indicating the potential for impairment. If indicators of impairment exist, we assess the recoverability of the affected long-lived assets and compare their fair values to the respective carrying amounts.

In order to estimate the fair value of identifiable intangible assets and other long-lived assets, we estimate the present value of future cash flows from those assets. The key assumptions that we use in our discounted cash flow model are the amount and timing of estimated future cash flows to be generated by the asset over an extended period of time and a rate of return that considers the relative risk of achieving the cash flows, the time value of money, and other factors that a willing market participant would consider. Significant judgment is required to estimate the amount and timing of future cash flows and the relative risk of achieving those cash flows.

Assumptions and estimates about future values and remaining useful lives are complex and often subjective. They can be affected by a variety of factors, including external factors such as industry and economic trends, and internal factors such as changes in our business strategy and our internal forecasts. For example, if our future operating results do not meet current forecasts or if we experience a sustained decline in our market capitalization that is determined to be indicative of a reduction in fair value of our reporting units, we may be required to record future impairment charges for purchased intangible assets. Impairment charges could materially decrease our future net income and result in lower asset values on our balance sheet.

Share-Based Compensation

We measure and recognize compensation expense for all share-based payments based on estimated fair value. Share-based compensation expense is recognized based on the fair value on a straight-line basis over the requisite service periods of the awards. The fair value of our restricted stock units is based on the market price of our common stock on the date of grant. The determination of fair value of performance stock units awards requires the use of certain estimates and assumptions that affect the amount of share-based compensation expense recognized in our consolidated statements of income. At each reported period, we reassess the probability of the achievement of corporate performance goals to estimate the amount of shares to be released. Any increase or decrease in share-based compensation expense resulting from an adjustment in the estimated shares to be released is treated as a cumulative catch-up in the period of adjustment. If any of the assumptions or estimates used change significantly, share-based compensation expense may differ materially from what we have recorded in the current period.

Income Taxes

Our provision for income taxes, deferred tax assets and liabilities, and reserves for unrecognized tax benefits reflect our best assessment of estimated future taxes to be paid. Significant judgments and estimates based on interpretations of existing tax laws or regulations in the United States and the numerous foreign jurisdictions where we are subject to income tax are required in determining our provision for income taxes. Changes in tax laws, statutory tax rates, and estimates of our future taxable income could impact the deferred tax assets and liabilities provided for in the consolidated financial statements and would require an adjustment to the provision for income taxes.

Deferred tax assets are regularly assessed to determine the likelihood they will be recovered from future taxable income. A valuation allowance is established when we believe it is more likely than not the future realization of all or some of a deferred tax asset will not be achieved. In evaluating our ability to recover deferred tax assets within the jurisdiction which they arise, we consider all available positive and negative evidence. Factors reviewed include the cumulative pre-tax book income for the past three years, scheduled reversals of deferred tax liabilities, our history of earnings and reliability of our forecasts, projections of pre-tax book income over the foreseeable future, and the impact of any feasible and prudent tax planning strategies.

We recognize the impact of a tax position in our consolidated financial statements only if that position is more likely than not of being sustained upon examination by taxing authorities, based on the technical merits of the position. Tax authorities regularly examine our returns in the jurisdictions in which we do business and we regularly assess the tax risk of our return filing positions. Due to the complexity of some of the uncertainties, the ultimate resolution may result in payments that are materially different from our current estimate of the tax liability. These differences, as well as any interest and penalties, will be reflected in the provision for income taxes in the period in which they are determined.

QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Interest Rate Sensitivity

Our investment portfolio is exposed to market risk from changes in interest rates. The fair market value of fixed-rate securities may be adversely impacted by fluctuations in interest rates while income earned on floating rate securities may decline as a result of decreases in interest rates. Under our current policies, we do not use interest rate derivative instruments to manage exposure to interest rate changes. We attempt to ensure the safety and preservation of our invested principal funds by limiting default risk, market risk, and reinvestment risk. We mitigate default risk by investing in investment-grade securities. We have historically maintained a relatively short average maturity for our investment portfolio, and we believe a hypothetical 100 basis point adverse move in interest rates along the entire interest rate yield curve would not materially affect the fair value of our interest-sensitive financial instruments.

Changes in interest rates may impact gains or losses from the conversion of our outstanding convertible senior notes. In June 2014, we issued $517 million aggregate principal amount of 0.5% convertible senior notes due 2021 (2021 Notes). In August 2018, we issued $750 million aggregate principal amount of 0% convertible senior notes due 2023 (2023 Notes). At our election, the notes are convertible into cash, shares of our common stock, or a

combination of cash and shares of our common stock under certain circumstances, including trading price conditions related to our common stock. If the trading price of our common stock reaches a price at 130% above the conversion price, the notes become convertible. Upon conversion, we are required to record a gain or loss for the difference between the fair value of the debt to be extinguished and its corresponding net carrying value. The fair value of the debt to be extinguished depends on our then-current incremental borrowing rate. If our incremental borrowing rate at the time of conversion is higher or lower than the implied interest rate of the notes, we will record a gain or loss in our consolidated statement of income during the period in which the notes are converted. The implicit interest rates for the 2021 and 2023 Notes were 3.5% and 3.7%, respectively. An incremental borrowing rate that is a hypothetical 100 basis points lower than the implicit interest rate upon conversion of $100 million aggregate principal amount of each of the 2021 and 2023 Notes would result in losses of approximately $2 million and $3 million, respectively.

Foreign Currency Exchange Risk

We conduct a portion of our business in currencies other than our U.S. dollar functional currency. These transactions give rise to monetary assets and liabilities that are denominated in currencies other than the U.S. dollar. The value of these monetary assets and liabilities are subject to changes in currency exchange rates from the time the transactions are originated until settlement in cash. Our foreign currency exposures are primarily concentrated in the euro, Japanese yen, Australian dollar, Canadian dollar, Singapore dollar, and British pound. Both realized and unrealized gains or losses on the value of these monetary assets and liabilities are included in the determination of net income.

We use forward exchange contracts to manage foreign currency risks related to monetary assets and liabilities denominated in currencies other than the U.S. dollar. We only use derivative financial instruments to reduce foreign currency exchange rate risks; we do not hold any derivative financial instruments for trading or speculative purposes. We primarily use forward exchange contracts to hedge foreign currency exposures, and they generally have terms of one month or less. Realized and unrealized gains or losses on the value of financial contracts entered into to hedge the exchange rate exposure of these monetary assets and liabilities are also included in the determination of net income, as they have not been designated for hedge accounting. These contracts, which settle monthly, effectively fix the exchange rate at which these specific monetary assets and liabilities will be settled, so that gains or losses on the forward contracts offset the gains or losses from changes in the value of the underlying monetary assets and liabilities. As of December 29, 2019, the total notional amounts of outstanding forward contracts in place for foreign currency purchases was $252 million.

RECENT ACCOUNTING PRONOUNCEMENTS

For a summary of recent accounting pronouncements applicable to our consolidated financial statements see note "1. Organization and Significant Accounting Policies" within the Consolidated Financial Statements section of this report, which is incorporated herein by reference.

OFF-BALANCE SHEET ARRANGEMENTS

We do not participate in any transactions that generate 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 other contractually narrow or limited purposes. During the fiscal year ended December 29, 2019, we were not involved in any "off-balance sheet arrangements" within the meaning of the rules of the Securities and Exchange Commission.

CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Stockholders of Illumina, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Illumina, Inc. (the Company) as of December 29, 2019 and December 30, 2018, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 29, 2019, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 29, 2019 and December 30, 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 29, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 29, 2019, based on criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 10, 2020 expressed an unqualified opinion thereon.

Adoption of ASU No. 2014-09

As discussed in Note 1 to the consolidated financial statements, the Company changed its method for recognizing revenue as a result of the adoption of Accounting Standards Update (ASU) No. 2014-09, *Revenue from Contracts with Customers* (*Topic 606*), and the amendments in ASUs 2015-14, 2016-08, 2016-10 and 2016-12, effective January 1, 2018.

Adoption of ASU No. 2016-02

As discussed in Note 1 to the consolidated financial statements, the Company changed its method of accounting for leases in 2019 due to the adoption of Accounting Standards Update (ASU) No. 2016-02, *Leases* (*Topic 842*), and the related amendments.

Basis for Opinion

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

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

Valuation of Inventory

Description of the Matter The Company's inventories totaled $359 million as of December 29, 2019. As explained in Note 1 to the consolidated financial statements, the Company assesses the valuation of inventory each reporting period. Obsolete inventory or inventory in excess of management's estimated usage requirement is written down to its estimated net realizable value if those balances are determined to be less than cost.

Auditing management's estimates for excess and obsolete inventory involved subjective auditor judgment because the estimates rely on a number of factors that are affected by market and economic conditions outside the Company's control. In particular, the excess and obsolete inventory calculations are sensitive to significant assumptions, including product life cycles, quality issues, historical experience, and usage forecasts.

How We Addressed the Matter in Our Audit We obtained an understanding, evaluated and tested the design and operating effectiveness of internal controls over the Company's excess and obsolete inventory valuation process, including management's assessment of the assumptions stated above and data underlying the excess and obsolete inventory valuation.

Our audit procedures included, among others, evaluating the significant assumptions stated above and the accuracy and completeness of the underlying data management used to value excess and obsolete inventory. We compared the balance of on-hand inventories to usage forecasts and historical usage and evaluated adjustments to forecasted usage for specific product considerations, such as new product introductions, technological changes or alternative uses. We also assessed the historical accuracy of management's estimates and performed sensitivity analyses over the significant assumptions to evaluate the changes in the excess and obsolete inventory estimates that would result from changes in the underlying assumptions.

/s/ ERNST & YOUNG LLP

We have served as the Company’s auditor since 1998.

San Diego, California
February 10, 2020

ILLUMINA, INC.

CONSOLIDATED BALANCE SHEETS
(In millions, except par value)

	December 29, 2019	December 30, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	**$ 2,042**	$ 1,144
Short-term investments	**1,372**	2,368
Accounts receivable, net	**573**	514
Inventory	**359**	386
Prepaid expenses and other current assets	**105**	78
Total current assets	**4,451**	4,490
Property and equipment, net	**889**	1,075
Operating lease right-of-use assets	**555**	—
Goodwill	**824**	831
Intangible assets, net	**145**	185
Deferred tax assets, net	**64**	70
Other assets	**388**	308
Total assets	**$ 7,316**	$ 6,959
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	**$ 149**	$ 184
Accrued liabilities	**516**	513
Long-term debt, current portion	**—**	1,107
Total current liabilities	**665**	1,804
Operating lease liabilities	**695**	—
Long-term debt	**1,141**	890
Other long-term liabilities	**202**	359
Commitments and contingencies		
Redeemable noncontrolling interests	**—**	61
Stockholders' equity:		
Preferred stock, $0.01 par value, 10 million shares authorized; no shares issued and outstanding at December 29, 2019 and December 30, 2018	**—**	—
Common stock, $0.01 par value, 320 million shares authorized; 194 million shares issued and 147 million outstanding at December 29, 2019; 192 million shares issued and 147 million outstanding at December 30, 2018	**2**	2
Additional paid-in capital	**3,560**	3,290
Accumulated other comprehensive income (loss)	**5**	(1)
Retained earnings	**4,067**	3,083
Treasury stock, 47 million shares and 45 million shares at cost at December 29, 2019 and December 30, 2018, respectively	**(3,021)**	(2,616)
Total Illumina stockholders' equity	**4,613**	3,758
Noncontrolling interests	**—**	87
Total stockholders' equity	**4,613**	3,845
Total liabilities and stockholders' equity	**$ 7,316**	$ 6,959

See accompanying notes to consolidated financial statements.

ILLUMINA, INC.

CONSOLIDATED STATEMENTS OF INCOME
(In millions, except per share amounts)

	Years Ended		
	December 29, 2019	**December 30, 2018**	**December 31, 2017**
Revenue:			
Product revenue	**$ 2,929**	$ 2,749	$ 2,289
Service and other revenue	**614**	584	463
Total revenue	**3,543**	3,333	2,752
Cost of revenue:			
Cost of product revenue	**802**	738	679
Cost of service and other revenue	**240**	260	208
Amortization of acquired intangible assets	**34**	35	39
Total cost of revenue	**1,076**	1,033	926
Gross profit	**2,467**	2,300	1,826
Operating expense:			
Research and development	**647**	623	546
Selling, general and administrative	**835**	794	674
Total operating expense	**1,482**	1,417	1,220
Income from operations	**985**	883	606
Other income (expense):			
Interest income	**75**	44	19
Interest expense	**(52)**	(57)	(37)
Other income, net	**110**	24	455
Total other income, net	**133**	11	437
Income before income taxes	**1,118**	894	1,043
Provision for income taxes	**128**	112	365
Consolidated net income	**990**	782	678
Add: Net loss attributable to noncontrolling interests	**12**	44	48
Net income attributable to Illumina stockholders	**$ 1,002**	$ 826	$ 726
Net income attributable to Illumina stockholders for earnings per share	**$ 1,002**	$ 826	$ 725
Earnings per share attributable to Illumina stockholders:			
Basic	**$ 6.81**	$ 5.63	$ 4.96
Diluted	**$ 6.74**	$ 5.56	$ 4.92
Shares used in computing earnings per share:			
Basic	**147**	147	146
Diluted	**149**	149	148

See accompanying notes to consolidated financial statements.

ILLUMINA, INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In millions)

	Years Ended		
	December 29, 2019	December 30, 2018	December 31, 2017
Consolidated net income	**$ 990**	$ 782	$ 678
Unrealized gain on available-for-sale debt securities, net of deferred tax	**6**	—	—
Total consolidated comprehensive income	**996**	782	678
Add: Comprehensive loss attributable to noncontrolling interests	**12**	44	48
Comprehensive income attributable to Illumina stockholders	**$ 1,008**	$ 826	$ 726

See accompanying notes to consolidated financial statements.

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ILLUMINA, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In millions)

	Illumina Stockholders								
	Common Stock		Additional Paid-In	Accumulated Other Comprehensive	Retained	Treasury Stock		Noncontrolling	Total Stockholders'
	Shares	Amount	Capital	(Loss) Income	Earnings	Shares	Amount	Interests	Equity
Balance as of January 1, 2017	189	$ 2	$ 2,733	$ (1)	$ 1,485	(43)	$ (2,022)	$ 73	$ 2,270
Net income (loss)	—	—	—	—	726	—	—	(7)	719
Issuance of common stock, net of repurchases	2	—	71	—	—	(1)	(319)	—	(248)
Share-based compensation	—	—	164	—	—	—	—	—	164
Adjustment to the carrying value of redeemable noncontrolling interests	—	—	(136)	—	—	—	—	—	(136)
Vesting of redeemable equity awards	—	—	(13)	—	—	—	—	—	(13)
Cumulative-effect adjustment from adoption of ASU 2016-09	—	—	3	—	45	—	—	—	48
Deconsolidation of GRAIL	—	—	11	—	—	—	—	(66)	(55)
Balance as of December 31, 2017	191	2	2,833	(1)	2,256	(44)	(2,341)	—	2,749
Net income (loss)	—	—	—	—	826	—	—	(10)	816
Issuance of common stock, net of repurchases	1	—	46	—	—	(1)	(275)	—	(229)
Share-based compensation	—	—	193	—	—	—	—	—	193
Adjustment to the carrying value of redeemable noncontrolling interests	—	—	127	—	—	—	—	—	127
Vesting of redeemable equity awards	—	—	(2)	—	—	—	—	—	(2)
Issuance of subsidiary shares	—	—	—	—	—	—	—	5	5
Contributions from noncontrolling interest owners	—	—	—	—	—	—	—	92	92
Issuance of convertible senior notes, net of tax impact	—	—	93	—	—	—	—	—	93
Cumulative-effect adjustment from adoption of ASU 2016-01	—	—	—	—	1	—	—	—	1
Balance as of December 30, 2018	**192**	**2**	**3,290**	**(1)**	**3,083**	**(45)**	**(2,616)**	**87**	**3,845**
Net income (loss)	**—**	**—**	**—**	**—**	**1,002**	**—**	**—**	**(3)**	**999**
Unrealized gain on available-for-sale debt securities, net of deferred tax	**—**	**—**	**—**	**6**	**—**	**—**	**—**	**—**	**6**
Issuance of common stock, net of repurchases	**2**	**—**	**59**	**—**	**—**	**(2)**	**(405)**	**—**	**(346)**
Share-based compensation	**—**	**—**	**194**	**—**	**—**	**—**	**—**	**—**	**194**
Adjustment to the carrying value of redeemable noncontrolling interests	**—**	**—**	**16**	**—**	**—**	**—**	**—**	**—**	**16**

Deconsolidation of Helix	**—**	**—**	**2**	**—**	**—**	**—**	**—**	**(84)**	**(82)**
Vesting of redeemable equity awards	**—**	**—**	**(1)**	**—**	**—**	**—**	**—**	**—**	**(1)**
Cumulative-effect adjustment from adoption of ASU 2016-02, net of deferred tax	**—**	**—**	**—**	**—**	**(18)**	**—**	**—**	**—**	**(18)**
Balance as of December 29, 2019	**194**	**$ 2**	**$ 3,560**	**$ 5**	**$ 4,067**	**(47)**	**$ (3,021)**	**$ —**	**$ 4,613**

See accompanying notes to consolidated financial statements.

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ILLUMINA, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In millions)

	Years Ended		
	December 29, 2019	**December 30, 2018**	**December 31, 2017**
Cash flows from operating activities:			
Consolidated net income	**$ 990**	$ 782	$ 678
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation expense	**151**	140	110
Amortization of intangible assets	**37**	39	46
Share-based compensation expense	**194**	193	164
Accretion of debt discount	**46**	41	30
Deferred income taxes	**11**	(18)	81
Payment of accreted debt discount	**(84)**	—	—
Unrealized gains on marketable equity securities	**(53)**	(21)	—
Gains on deconsolidation	**(54)**	—	(453)
Loss on Continuation Advances	**8**	—	—
Impairment of intangible assets	**—**	—	23
Other	**(1)**	4	1
Changes in operating assets and liabilities:			
Accounts receivable	**(58)**	(105)	(26)
Inventory	**25**	(53)	(33)
Prepaid expenses and other current assets	**(14)**	5	8
Operating lease right-of-use assets and liabilities, net	**(5)**	—	—
Other assets	**(30)**	(9)	(5)
Accounts payable	**(35)**	45	10
Accrued liabilities	**(44)**	103	81
Other long-term liabilities	**(33)**	(4)	160
Net cash provided by operating activities	**1,051**	1,142	875
Cash flows from investing activities:			
Maturities of available-for-sale securities	**1,387**	860	321
Purchases of available-for-sale securities	**(1,010)**	(2,859)	(742)
Sales of available-for-sale securities	**629**	597	322
Purchases of property and equipment	**(209)**	(296)	(310)
Net purchases of strategic investments	**(20)**	(15)	(29)
Cash paid for Continuation Advances	**(18)**	—	—
Deconsolidation of Helix and GRAIL cash	**(29)**	—	(52)
Proceeds from the deconsolidation of GRAIL	**15**	—	278
Net cash paid for acquisitions	**—**	(100)	—
Cash paid for intangible assets	**—**	—	(2)
Net cash provided by (used in) investing activities	**745**	(1,813)	(214)
Cash flows from financing activities:			
Payments on financing obligations	**(550)**	(4)	(9)
Net proceeds from issuance of debt	**—**	735	5
Common stock repurchases	**(324)**	(201)	(251)
Proceeds from issuance of common stock	**59**	46	71
Taxes paid related to net share settlement of equity awards	**(82)**	(74)	(68)
Contributions from noncontrolling interest owners	**—**	92	79

Payments on acquisition-related contingent consideration liability	**—**	—	(3)
Net cash (used in) provided by financing activities	**(897)**	594	(176)
Effect of exchange rate changes on cash and cash equivalents	**(1)**	(4)	5
Net increase (decrease) in cash and cash equivalents	**898**	(81)	490
Cash and cash equivalents at beginning of year	**1,144**	1,225	735
Cash and cash equivalents at end of year	**$ 2,042**	$ 1,144	$ 1,225
Supplemental cash flow information:			
Cash paid for income taxes	**$ 164**	$ 99	$ 149
Cash paid for operating lease liabilities	**$ 84**	$ —	$ —

See accompanying notes to consolidated financial statements.

ILLUMINA, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Unless the context requires otherwise, references in this report to "Illumina," "we," "us," the "Company," and "our" refer to Illumina, Inc. and its consolidated subsidiaries.

1. ORGANIZATION AND SIGNIFICANT ACCOUNTING POLICIES

Business Overview

We are a provider of sequencing- and array-based solutions, serving customers in the research, clinical and applied markets. Our products are used for applications in the life sciences, oncology, reproductive health, agriculture and other emerging segments. Our customers include leading genomic research centers, academic institutions, government laboratories, and hospitals, as well as pharmaceutical, biotechnology, commercial molecular diagnostic laboratories, and consumer genomics companies.

Basis of Presentation

The consolidated financial statements have been prepared in conformity with U.S. generally accepted accounting principles and include our accounts, our wholly-owned subsidiaries, majority-owned or controlled companies, and variable interest entities for which we are the primary beneficiary. All intercompany transactions and balances have been eliminated in consolidation. Certain prior period amounts have been reclassified to conform to the current period presentation.

Variable Interest Entities (VIEs)

We evaluate our ownership, contractual and other interests in entities that are not wholly-owned to determine if these entities are VIEs, and, if so, whether we are the primary beneficiary of the VIE. In determining whether we are the primary beneficiary of a VIE and therefore required to consolidate the VIE, we apply a qualitative approach that determines whether we have both (1) the power to direct the activities of the VIE that most significantly impact the VIE's economic performance and (2) the obligation to absorb losses of, or the rights to receive benefits from, the VIE that could potentially be significant to that VIE. We continuously perform this assessment, as changes to existing relationships or future transactions may result in the consolidation or deconsolidation of a VIE. See note "3. Investments and Fair Value Measurements" for further details.

Use of Estimates

The preparation of the consolidated financial statements requires that management make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, expenses, and related disclosures of contingent assets and liabilities. Actual results could differ from those estimates.

Fiscal Year

Our fiscal year is the 52 or 53 weeks ending the Sunday closest to December 31, with quarters of 13 or 14 weeks ending the Sunday closest to March 31, June 30, September 30, and December 31. References to 2019, 2018, and 2017 refer to fiscal years ended December 29, 2019, December 30, 2018, and December 31, 2017, respectively, all of which were 52 weeks.

Functional Currency

The U.S. dollar is the functional currency of our international operations. We re-measure foreign subsidiaries' monetary assets and liabilities to the U.S. dollar and record the net gains or losses resulting from re-measurement in other income, net in the consolidated statements of income.

Concentrations of Risk

Customers

We operate in markets that are highly competitive and rapidly changing. Significant technological changes, shifting customer needs, the emergence of competitive products or services with new capabilities, and other factors could negatively impact our operating results. A portion of our customers consist of university and research institutions that management believes are, to some degree, directly or indirectly supported by the United States Government. A significant change in current research funding, particularly with respect to the U.S. National Institutes of Health, could have an adverse impact on future revenues and results of operations.

International sales entail a variety of risks, including currency exchange fluctuations, longer payment cycles, and greater difficulty in accounts receivable collection. We are also subject to general geopolitical risks, such as political, social and economic instability, and changes in diplomatic and trade relations. The risks of international sales are mitigated in part by the extent to which sales are geographically distributed. Shipments to customers outside the United States comprised 48%, 47%, and 45% of total revenue in 2019, 2018, and 2017, respectively. Customers outside the United States represented 53% and 44% of our gross trade accounts receivable balance as of December 29, 2019 and December 30, 2018, respectively.

We had no customers that provided more than 10% of total revenue in 2019, 2018, and 2017. We perform regular reviews of customer activity and associated credit risks and do not require collateral or enter into netting arrangements. Historically, we have not experienced significant credit losses from accounts receivable.

Financial Instruments

We are also subject to risks related to our financial instruments, including cash and cash equivalents, investments, and accounts receivable. Most of our cash and cash equivalents as of December 29, 2019 were deposited with U.S. financial institutions, either domestically or with their foreign branches. Our investment policy restricts the amount of credit exposure to any one issuer to 5% of the portfolio or 5% of the total issue size outstanding at the time of purchase and to any one industry sector, as defined by Clearwater Analytics (Industry Sector Report), to 30% of the portfolio at the time of purchase. There is no limit to the percentage of the portfolio that may be maintained in debt securities, U.S. government-sponsored entities, U.S. Treasury securities, and money market funds. Historically, we have not experienced significant credit losses from financial instruments.

Suppliers

We require customized products and components that currently are available from a limited number of sources. We source certain key products and components included in our products from single vendors.

Segments

We report segment information based on the management approach. This approach designates the internal reporting used by the Chief Operating Decision Maker (CODM) for making decisions and assessing performance as the source of our reportable segments. The CODM allocates resources and assesses the performance of each operating segment using information about its revenue and income (loss) from operations. Management evaluates the performance of our reportable segments based upon income (loss) from operations. We do not allocate expenses between segments.

Accounting Pronouncements Adopted in 2019

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842), which requires lessees to recognize most leases on the balance sheet as lease liabilities with corresponding right-of-use assets and to disclose key information about leasing arrangements. We adopted Topic 842 on its effective date in the first quarter of 2019 using a modified retrospective approach by recognizing a cumulative-effect adjustment to retained earnings as of December 31, 2018.

We elected the available package of practical expedients upon adoption, which allowed us to carry forward our historical assessment of whether existing agreements contained a lease and the classification of our existing operating leases. We continue to report our financial position as of December 30, 2018 under the former lease accounting standard (Topic 840) in our consolidated balance sheet.

The following table summarizes the impact of Topic 842 on our consolidated balance sheet upon adoption on December 31, 2018:

	December 31, 2018		
In millions	Pre-adoption	Adoption Impact	Post-adoption
ASSETS			
Prepaid expenses and other current assets	$ 78	$ (8)	$ 70
Property and equipment, net	1,075	(241)	834
Operating lease right-of-use assets	—	579	579
Deferred tax assets, net	70	6	76
Total assets	$ 1,223	$ 336	$ 1,559
LIABILITIES AND STOCKHOLDERS' EQUITY			
Accrued liabilities	$ 513	$ 36	$ 549
Operating lease liabilities	—	722	722
Long-term debt	1,107	(269)	838
Other long-term liabilities	359	(135)	224
Retained earnings	3,083	(18)	3,065
Total liabilities and stockholders' equity	$ 5,062	$ 336	$ 5,398

The adoption impact summarized above was primarily due to the recognition of operating lease liabilities with corresponding right-of-use assets based on the present value of our remaining minimum lease payments, and the derecognition of existing fixed assets and financing obligations related to build-to-suit leasing arrangements that, under Topic 840, did not qualify for sale-leaseback accounting. The difference between these amounts, net of deferred tax, was recorded as a cumulative-effect adjustment to retained earnings.

Accounting Pronouncements Adopted in 2018

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)*. The new standard is based on the principle that revenue should be recognized in an amount that reflects the consideration to which we expect to be entitled in exchange for the transfer of promised goods or services. We adopted Topic 606 using the modified retrospective transition method. The cumulative effect of applying the new revenue standard to all incomplete contracts as of January 1, 2018 was not material and, therefore, did not result in an adjustment to retained earnings. There was no material difference to the consolidated financial statements in 2018 due to the adoption of Topic 606.

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments - Overall (Subtopic 825-10)*, which requires equity investments (other than those accounted for under the equity method or those that result in consolidation) to be measured at fair value, with changes in fair value recognized in net income. This standard was effective for us beginning in the first quarter of 2018. Based on our elections, our equity investments that do not have readily determinable fair values and do not qualify for the net asset value practical expedient for estimating fair value are measured at cost, less any impairments, plus or minus changes resulting from observable price changes in orderly transactions for identifiable or similar investments of the same issuer. This measurement alternative was applied prospectively to such equity securities and did not result in an adjustment to retained earnings.

Accounting Pronouncements Adopted in 2017

In March 2016, the FASB issued ASU 2016-09, *Compensation - Stock Compensation (Topic 718)*, which aims to simplify the accounting for share-based payment transactions, including accounting for income taxes, classification

on the statement of cash flows, accounting for forfeitures, and classification of awards as either liabilities or equity. This ASU was effective for us beginning in the first quarter of 2017. This new standard increased the volatility of net income by requiring excess tax benefits from share-based payment arrangements to be classified as discrete items within the provision for income taxes, rather than recognizing excess tax benefits in additional paid-in capital. Upon adoption in the first quarter of 2017, we recorded $45 million, net, to retained earnings, primarily related to unrealized tax benefits associated with share-based compensation. As a result of the adoption of this new standard, we made an accounting policy election to recognize forfeitures as they occur and no longer estimate expected forfeitures. In addition, ASU 2016-09 requires that excess income tax benefits from share-based compensation arrangements be classified as cash flow from operations, rather than cash flow from financing activities. We elected to apply the cash flow classification guidance retrospectively.

Accounting Pronouncements Pending Adoption

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments*, which amends the impairment model by requiring entities to use a forward-looking approach based on expected losses to estimate credit losses on certain types of financial instruments, including trade receivables and available-for-sale debt securities. We will adopt the standard on its effective date in the first quarter of 2020, using a modified retrospective approach. We currently do not expect the adoption to have a material impact on our consolidated financial statements.

Revenue Recognition

Our revenue is generated primarily from the sale of products and services. Product revenue primarily consists of sales of instruments and consumables used in genetic analysis. Service and other revenue primarily consists of revenue generated from genotyping and sequencing services, instrument service contracts, and development and licensing agreements.

We recognize revenue when control of our products and services is transferred to our customers in an amount that reflects the consideration we expect to receive from our customers 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. Revenue recognition for contracts with multiple deliverables is based on the separate satisfaction of each distinct performance obligation within the contract. 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. We consider a performance obligation satisfied once we have transferred control of a good or service to the customer, meaning the customer has the ability to use and obtain the benefit of the good or service. The contract price is allocated to each performance obligation in proportion to its standalone selling price. We determine our best estimate of standalone selling price using average selling prices over a rolling 12-month period coupled with an assessment of current market conditions. If the product or service has no history of sales or if the sales volume is not sufficient, we rely upon prices set by management, adjusted for applicable discounts.

Revenue from product sales is recognized generally upon delivery to the end customer, which is when control of the product is deemed to be transferred. Invoicing typically occurs upon shipment and payment is typically due within 60 days from invoice. In instances where right of payment or transfer of title is contingent upon the customer’s acceptance of the product, revenue is deferred until all acceptance criteria have been met. Revenue from genotyping and sequencing services is recognized when earned, which is generally at the time the genotyping or sequencing analysis data is made available to the customer. Revenue from instrument service contracts is recognized as the services are rendered, typically evenly over the contract term. Revenue from development and licensing agreements generally includes upfront and periodic licensing fees, contract research and development services, or payments for development and regulatory milestones. Revenue for these agreements is recognized when each distinct performance obligation is satisfied.

Revenue is recorded net of discounts, distributor commissions, and sales taxes collected on behalf of governmental authorities. Employee sales commissions are recorded as selling, general and administrative expenses when incurred as the amortization period for such costs, if capitalized, would have been one year or less.

In certain markets, products and services are sold to customers through distributors. In most sales through distributors, the product is delivered directly to customers by us. The terms of sales transactions through distributors are consistent with the terms of direct sales to customers.

Earnings per Share

Basic earnings per share attributable to Illumina stockholders is computed based on the weighted average number of common shares outstanding during the period. Diluted earnings per share attributable to Illumina stockholders is computed based on the sum of the weighted average number of common shares and potentially dilutive common shares outstanding during the period. Up to April 25, 2019 and February 28, 2017, the date of the Helix and GRAIL deconsolidations, respectively, per-share losses of Helix and GRAIL were included in the consolidated basic and diluted earnings per share computations based on our share of the entities' securities.

Potentially dilutive common shares consist of shares issuable under convertible senior notes and equity awards. Convertible senior notes have a dilutive impact when the average market price of our common stock exceeds the applicable conversion price of the respective notes. Potentially dilutive common shares from equity awards are determined using the average share price for each period under the treasury stock method. In addition, proceeds from exercise of equity awards and the average amount of unrecognized compensation expense for equity awards are assumed to be used to repurchase shares.

The following table presents the calculation of weighted average shares used to calculate basic and diluted earnings per share:

	Years Ended		
In millions	**December 29, 2019**	**December 30, 2018**	**December 31, 2017**
Weighted average shares outstanding	**147**	147	146
Effect of potentially dilutive common shares from:			
Equity awards	**1**	1	2
Convertible senior notes	**1**	1	—
Weighted average shares used in calculating diluted earnings per share	**149**	149	148

Fair Value Measurements

The fair value of assets and liabilities are based on the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value maximize the use of observable inputs and minimize the use of unobservable inputs. We use a fair value hierarchy with three levels of inputs, of which the first two are considered observable and the last unobservable, to measure fair value:

- *Level 1* — Quoted prices in active markets for identical assets or liabilities.
- *Level 2* — Inputs, other than Level 1, that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- *Level 3* — Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The carrying amounts of financial instruments such as cash and cash equivalents, accounts receivable, prepaid expenses and other current assets, accounts payable, and accrued liabilities approximate the related fair values due to the short-term maturities of these instruments.

Cash Equivalents and Debt Securities

Cash equivalents are comprised of short-term, highly-liquid investments with maturities of 90 days or less at the date of purchase.

We hold debt securities in U.S. government-sponsored entities, corporate debt securities, and U.S. Treasury securities. We have the ability, if necessary, to liquidate any of our short-term debt securities to meet our liquidity needs in the next 12 months. Accordingly, those investments with contractual maturities greater than one year from the date of purchase are classified as short-term investments on the accompanying consolidated balance sheets. We classify short-term debt investments as available-for-sale at the time of purchase and evaluate such classification as of each balance sheet date. All short-term debt investments are recorded at estimated fair value. Unrealized gains and losses for available-for-sale debt securities are included in accumulated other comprehensive income (loss), a component of stockholders' equity. We evaluate our debt investments to assess whether those with unrealized loss positions are other than temporarily impaired. Impairments are considered to be other than temporary if they are related to deterioration in credit risk or if it is likely that the securities will be sold before the recovery of their cost basis. Realized gains, losses, and declines in value judged to be other than temporary are determined based on the specific identification method and are recorded in interest income in the consolidated statements of income.

Equity Securities and Investments

We have strategic investments in privately-held companies (non-marketable equity securities) and companies that have completed initial public offerings (marketable equity securities). Our marketable equity securities are measured at fair value. Our non-marketable equity securities without readily determinable market values are initially measured at cost and adjusted to fair value for observable transactions for identical or similar investments of the same issuer or impairment. Equity investments are classified as current or noncurrent based on the nature of the securities and their availability for use in current operations. Unrealized gains and losses for equity investments are recorded in other income, net in the consolidated statements of income.

Our equity investments are assessed for impairment quarterly. Impairment losses, equal to the difference between the carrying value and the fair value of the investment, are recorded in other income, net.

We use the equity method to account for investments through which we have the ability to exercise significant influence, but not control, over the investee. Such investments are recorded in other assets, and our share of net income or loss is recognized on a one quarter lag in other income, net.

Revenue recognized from transactions with our strategic investees was $71 million, $143 million, and $127 million in 2019, 2018, and 2017, respectively.

Accounts Receivable

Trade accounts receivable are recorded at the net invoice value and are not interest-bearing. Receivables are considered past due based on the contractual payment terms. We reserve specific receivables if collectibility is no longer probable. We also reserve a percentage of our trade receivable balance based on collection history and current economic trends that might impact the level of future credit losses. These reserves are re-evaluated on a regular basis and adjusted as needed. Once a receivable is deemed to be uncollectible, such balance is charged against the reserve.

Inventory

Inventory is stated at the lower of cost or net realizable value, on a first-in, first-out basis. Inventory includes raw materials and finished goods that may be used in the research and development process, and such items are expensed as consumed or capitalized as property and equipment and depreciated. Inventory write-downs for slow-moving, excess, and obsolete inventories are estimated based on product life cycles, quality issues, historical experience, and usage forecasts.

Property and Equipment

Property and equipment are stated at cost, subject to review for impairment, and depreciated over the estimated useful lives of the assets, using the straight-line method. Depreciation of leasehold improvements is recorded over the shorter of the lease term or the estimated useful life of the related assets. Maintenance and repairs are expensed as incurred. When assets are sold, or otherwise disposed of, the cost and related accumulated depreciation are removed from the accounts and any gain or loss is included in operating expense.

Costs incurred to develop internal-use software during the application development stage are recorded as computer software costs, at cost. Costs incurred in the development of such internal-use software, including external direct costs of materials and services and applicable compensation costs of employees devoted to specific software application development, are capitalized. Cost incurred outside of the application development stage are expensed as incurred.

The estimated useful lives of the major classes of property and equipment are generally as follows:

	Estimated Useful Lives
Buildings and leasehold improvements	4 to 20 years
Machinery and equipment	3 to 5 years
Computer hardware and software	3 to 9 years
Furniture and fixtures	7 years

Leases

We lease approximately 2.5 million square feet of office, lab, manufacturing, and distribution facilities under various non-cancellable operating lease agreements (real estate leases). Our real estate leases have remaining lease terms of approximately 1 to 19 years, which represent the non-cancellable periods of the leases and include extension options that we determined are reasonably certain to be exercised. We exclude extension options that are not reasonably certain to be exercised from our lease terms, ranging from approximately 6 months to 20 years. Our lease payments consist primarily of fixed rental payments for the right to use the underlying leased assets over the lease terms as well as payments for common-area-maintenance and administrative services. We often receive customary incentives from our landlords, such as reimbursements for tenant improvements and rent abatement periods, which effectively reduce the total lease payments owed for these leases. Leases are classified as operating or financing at commencement. We do not have any material financing leases.

Operating lease right-of-use assets and liabilities on our consolidated balance sheets represent the present value of our remaining lease payments over the remaining lease terms. We do not allocate lease payments to non-lease components; therefore, fixed payments for common-area-maintenance and administrative services are included in our operating lease right-of-use assets and liabilities. We use our incremental borrowing rate to calculate the present value of our lease payments, as the implicit rates in our leases are not readily determinable. Operating lease costs consist primarily of the fixed lease payments included in our operating lease liabilities and are recorded on a straight-line basis over the lease terms. We sublease certain real estate to third parties and this sublease income is also recorded on a straight-line basis.

Goodwill, Intangible Assets and Other Long-Lived Assets

Assets acquired and liabilities assumed are measured at fair value as of the acquisition date. Goodwill, which has an indefinite useful life, represents the excess of cost over fair value of the net assets acquired.

Goodwill is reviewed for impairment at least annually during the second quarter, or more frequently if an event occurs indicating the potential for impairment. During the goodwill impairment review, we assess qualitative factors to determine whether it is more likely than not that the fair values of our reporting units are less than the carrying amounts, including goodwill. The qualitative factors include, but are not limited to, macroeconomic conditions, industry and market considerations, and the overall financial performance. If, after assessing the totality of these qualitative factors, we determine that it is not more likely than not that the fair values of our reporting units are less than the carrying amounts, then no additional assessment is deemed necessary. Otherwise, we proceed to perform the two-step test for goodwill impairment. The first step involves comparing the estimated fair values of the reporting units with the carrying values, including goodwill. If the carrying amounts of the reporting units exceed the fair values, the second step of the goodwill impairment test is performed to determine the amount of loss, which involves comparing the implied fair values of the goodwill to the carrying values of the goodwill. We may also elect to bypass the qualitative assessment in a period and elect to proceed to perform the first step of the goodwill impairment test.

Our identifiable intangible assets are typically comprised of acquired core technologies, licensed technologies, customer relationships, license agreements, and trade names. The cost of identifiable intangible assets with finite lives is generally amortized on a straight-line basis over the assets' respective estimated useful lives.

We perform regular reviews to determine if any event has occurred that may indicate that intangible assets with finite useful lives and other long-lived assets are potentially impaired. If indicators of impairment exist, an impairment test is performed to assess the recoverability of the affected assets by determining whether the carrying amount of such assets exceeds the undiscounted expected future cash flows. If the affected assets are not recoverable, we estimate the fair value of the assets and record an impairment loss if the carrying value of the assets exceeds the fair value. Factors that may indicate potential impairment include a significant decline in our stock price and market capitalization compared to the net book value, significant changes in the ability of a particular asset to generate positive cash flows for our strategic business objectives, and the pattern of utilization of a particular asset.

Derivatives

We are exposed to foreign exchange rate risks in the normal course of business. We enter into foreign exchange contracts to manage foreign currency risks related to monetary assets and liabilities that are denominated in currencies other than the U.S. dollar. These foreign exchange contracts are carried at fair value in other current assets or accrued liabilities and are not designated as hedging instruments. Changes in the value of the derivatives are recognized in other income, net, along with the re-measurement gain or loss on the foreign currency denominated assets or liabilities.

As of December 29, 2019, we had foreign exchange forward contracts in place to hedge exposures in the euro, Japanese yen, Australian dollar, Canadian dollar, Singapore dollar, and British pound. As of December 29, 2019 and December 30, 2018, the total notional amounts of outstanding forward contracts in place for foreign currency purchases was $252 million and $122 million, respectively.

Warranties

We generally provide a one-year warranty on instruments. Additionally, we provide a warranty on consumables through the expiration date, which generally ranges from six to twelve months after the manufacture date. At the time revenue is recognized, an accrual is established for estimated warranty expenses based on historical experience as well as anticipated product performance. We periodically review the warranty reserve for adequacy and adjust the warranty accrual, if necessary, based on actual experience and estimated costs to be incurred. Warranty expense is recorded as a component of cost of product revenue.

Share-Based Compensation

Share-based compensation expense is incurred related to restricted stock and Employee Stock Purchase Plan (ESPP).

Restricted stock units (RSU) and performance stock units (PSU) are both considered restricted stock. The fair value of restricted stock is determined by the closing market price of our common stock on the date of grant. Share-based compensation expense is recognized based on the fair value on a straight-line basis over the requisite service periods of the awards. PSU represents a right to receive a certain number of shares of common stock based on the achievement of corporate performance goals and continued employment during the vesting period. At each reporting period, we reassess the probability of the achievement of such corporate performance goals and any increase or decrease in share-based compensation expense resulting from an adjustment in the estimated shares to be released is treated as a cumulative catch-up in the period of adjustment.

The Black-Scholes-Merton option-pricing model is used to estimate the fair value of stock purchased under our ESPP. The model assumptions include expected volatility, term, dividends, and the risk-free interest rate. The expected volatility is determined by equally weighing the historical and implied volatility of our common stock. The historical volatility is generally commensurate with the estimated expected term, adjusted for the impact of unusual fluctuations and other relevant factors. The implied volatility is calculated from the implied market volatility of exchange-traded call options on our common stock. The expected term is based on historical forfeiture experience and the terms and conditions of the ESPP. The expected dividend yield is determined to be 0% given that we have never declared or paid cash dividends on our common stock and do not anticipate paying such cash dividends. The risk-free interest rate is based upon U.S. Treasury securities with remaining terms similar to the expected term of the share-based awards.

Forfeitures are accounted for, as incurred, as a reversal of share-based compensation expense related to awards that will not vest.

Shipping and Handling Expenses

Shipping and handling expenses are included in cost of product revenue.

Research and Development

Research and development expenses include personnel expenses, contractor fees, facilities-related costs, material costs, and license fees. Expenditures relating to research and development are expensed in the period incurred.

Advertising Costs

Advertising costs are expensed as incurred. Advertising costs were $28 million, $38 million, and $30 million in 2019, 2018, and 2017, respectively.

Income Taxes

The provision for income taxes is computed using the asset and liability method, under which deferred tax assets and liabilities are recognized for the expected future tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities, and for the expected future tax benefit to be derived from tax loss and credit carryforwards. Deferred tax assets and liabilities are determined using the enacted tax rates in effect for the years in which those tax assets are expected to be realized. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in the provision for income taxes in the period that includes the enactment date.

Deferred tax assets are regularly assessed to determine the likelihood they will be recovered from future taxable income. A valuation allowance is established when we believe it is more likely than not the future realization of all or some of a deferred tax asset will not be achieved. In evaluating the ability to recover deferred tax assets within the jurisdiction which they arise, we consider all available positive and negative evidence. Factors reviewed include the cumulative pre-tax book income for the past three years, scheduled reversals of deferred tax liabilities, history of earnings and reliable forecasting, projections of pre-tax book income over the foreseeable future, and the impact of any feasible and prudent tax planning strategies.

The impact of a tax position is recognized in the consolidated financial statements only if that position is more likely than not of being sustained upon examination by taxing authorities, based on the technical merits of the position. Any interest and penalties related to uncertain tax positions will be reflected in income tax expense.

2. REVENUE

Our revenue is generated primarily from the sale of products and services. Product revenue primarily consists of sales of instruments and consumables used in genetic analysis. Service and other revenue primarily consists of revenue generated from genotyping and sequencing services, instrument service contracts, and development and licensing agreements.

Revenue by Source

	2019			2018			2017		
in millions	**Sequencing**	**Microarray**	**Total**	**Sequencing**	**Microarray**	**Total**	**Sequencing**	**Microarray**	**Total**
Consumables	**$ 2,075**	**$ 317**	**$ 2,392**	$ 1,824	$ 353	$ 2,177	$ 1,484	$ 287	$ 1,771
Instruments	**517**	**20**	**537**	535	37	572	487	31	518
Total product revenue	**2,592**	**337**	**2,929**	2,359	390	2,749	1,971	318	2,289
Service and other revenue	**476**	**138**	**614**	416	168	584	322	141	463
Total revenue	**$ 3,068**	**$ 475**	**$ 3,543**	$ 2,775	$ 558	$ 3,333	$ 2,293	$ 459	$ 2,752

Revenue by Geographic Area

Based on region of destination (in millions)	**2019**	**2018**	**2017**
Americas (1)	**$ 1,970**	$ 1,864	$ 1,585
Europe, Middle East, and Africa	**933**	851	653
Greater China (2)	**372**	365	292
Asia-Pacific	**268**	253	222
Total revenue	**$ 3,543**	$ 3,333	$ 2,752

(1) Revenue for the Americas region included United States revenue of $1,859 million, $1,779 million, and $1,511 million in 2019, 2018, and 2017, respectively.
(2) Region includes revenue from China, Taiwan, and Hong Kong.

Performance Obligations

We regularly enter into contracts with multiple performance obligations. Most performance obligations are generally satisfied within a short time frame, approximately three to six months, after the contract execution date. As of December 29, 2019, the aggregate amount of the transaction price allocated to remaining performance obligations was $980 million, of which approximately 66% is expected to be converted to revenue through 2020, approximately 14% in the following twelve months, and the remainder thereafter.

Contract Liabilities

Contract liabilities, which consist of deferred revenue and customer deposits, as of December 29, 2019 and December 30, 2018 were $209 million and $206 million, respectively, of which the short-term portions of $167 million and $175 million, respectively, were recorded in accrued liabilities and the remaining long-term portions were recorded in other long-term liabilities. Revenue recorded in 2019 included $150 million of previously deferred revenue that was included in contract liabilities as of December 30, 2018.

3. INVESTMENTS AND FAIR VALUE MEASUREMENTS

Debt Securities

Our short-term investments are primarily available-for-sale debt securities that consisted of the following:

	December 29, 2019			December 30, 2018			
In millions	Amortized Cost	Gross Unrealized Gains	Estimated Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Debt securities in government-sponsored entities	**$ 18**	**$ —**	**$ 18**	$ 21	$ —	$ —	$ 21
Corporate debt securities	**627**	**3**	**630**	1,060	—	(2)	1,058
U.S. Treasury securities	**616**	**2**	**618**	1,250	1	(1)	1,250
Total	**$ 1,261**	**$ 5**	**$ 1,266**	$ 2,331	$ 1	$ (3)	$ 2,329

Contractual maturities of available-for-sale debt securities, as of December 29, 2019, were as follows:

In millions	Estimated Fair Value
Due within one year	$ 512
After one but within five years	754
Total	$ 1,266

Strategic Investments

Marketable Equity Securities

As of December 29, 2019 and December 30, 2018, the fair value of our marketable equity securities, included in short-term investments, totaled $106 million and $39 million, respectively. Total unrealized gains on our marketable equity securities, included in other income, net, were $53 million and $21 million in 2019 and 2018, respectively.

Non-Marketable Equity Securities

As of December 29, 2019 and December 30, 2018, the aggregate carrying amounts of our non-marketable equity securities without readily determinable fair values, included in other assets, were $220 million and $231 million, respectively. The decline was primarily due to the reclassification of an equity security that became marketable in 2019 to short-term investments.

One of our non-marketable equity investments is a VIE for which we have concluded that we are not the primary beneficiary, and therefore, we do not consolidate this VIE in our consolidated financial statements. We have determined our maximum exposure to loss, as a result of our involvement with the VIE, to be the carrying value of our investment, which was $190 million and $189 million as of December 29, 2019 and December 30, 2018, respectively, recorded in other assets.

Venture Funds

We invest in two venture capital investment funds (the Funds) with capital commitments of $100 million, callable through April 2026, and up to $160 million, callable through July 2029, respectively, of which $51 million and up to $160 million, respectively, remained callable as of December 29, 2019. Our investments in the Funds are accounted for as equity-method investments. The aggregate carrying amounts of the Funds, included in other assets, were $53 million and $29 million as of December 29, 2019 and December 30, 2018, respectively.

Consolidated Variable Interest Entities

Helix Holdings I, LLC

In July 2015, we obtained a 50% voting equity ownership interest in Helix Holdings I, LLC (Helix), a limited liability company formed with unrelated third-party investors to pursue the development and commercialization of a marketplace for consumer genomics. We determined that Helix was a VIE as the holders of the at-risk equity investments as a group lack the power to direct the activities of Helix that most significantly impact Helix's economic performance. Additionally, we determined that we had (a) unilateral power over one of the activities that most significantly impacts the economic performance of Helix through its contractual arrangements and no one individual party has unilateral power over the remaining significant activities of Helix and (b) the obligation to absorb losses of and the right to receive benefits from Helix that are potentially significant to Helix. As a result, we were deemed to be the primary beneficiary of Helix and were required to consolidate Helix.

As contractually committed, in July 2015, we contributed certain perpetual licenses, instruments, intangibles, initial laboratory setup, and discounted supply terms in exchange for voting equity interests in Helix. Such contributions were recorded at their historical basis as they remained within our control. Helix was financed through cash contributions made by us and the third-party investors in exchange for voting equity interests in Helix. During 2018, we made additional investments of $100 million in exchange for voting equity interests in Helix. As of December 30, 2018, the noncontrolling shareholders and Illumina each held 50% of Helix's outstanding voting equity interests.

Certain noncontrolling Helix investors may have required us to redeem certain noncontrolling interests in cash at the then approximate redemption fair market value. Such redemption right was exercisable at the option of certain noncontrolling interest holders after January 1, 2021, provided that a bona fide pursuit of the sale of Helix had occurred and an initial public offering of Helix had not been completed. As the contingent redemption was outside of our control, the redeemable noncontrolling interests in Helix was classified outside of stockholders' equity on the accompanying consolidated balance sheets. The balance of the redeemable noncontrolling interests was reported at the greater of its carrying value after receiving its allocation of Helix's profits and losses or its estimated redemption value at each reporting date. The fair value of the redeemable noncontrolling interests was considered a Level 3 instrument.

As of December 30, 2018, the accompanying consolidated balance sheet included $127 million of cash, cash equivalents, and short-term investments attributable to Helix that could be used to settle its respective obligations and was not available to settle obligations of Illumina. The remaining assets and liabilities of Helix were not significant to our financial position as of December 30, 2018. Helix had an immaterial impact on our consolidated statements of income and cash flows in all periods presented.

On April 25, 2019, we entered into an agreement to sell our interest in, and relinquish control over, Helix. As part of the agreement, (i) Helix repurchased all of our outstanding equity interests in exchange for a contingent value right with a 7-year term that entitles us to consideration dependent upon the outcome of Helix's future financing and/or liquidity events, (ii) we ceased having a controlling financial interest in Helix, including unilateral power over one of the activities that most significantly impacts the economic performance of Helix, (iii) we were relieved of any potential obligation to redeem certain noncontrolling interests, and (iv) we no longer have representation on Helix's board of directors. As a result, we deconsolidated Helix's financial statements effective April 25, 2019 and recorded a gain on deconsolidation of $39 million in other income, net. The gain on deconsolidation included (i) the contingent value right received from Helix recorded at a fair value of approximately $30 million, (ii) the derecognition of the carrying amounts of Helix's assets and liabilities, and (iii) the derecognition of the noncontrolling interests related to Helix.

As of December 29, 2019, the fair value of the contingent value right received from Helix, included in other assets, was $29 million. Changes in the fair value of the contingent value right resulted in a $1 million unrealized loss in 2019, included in other income, net.

GRAIL, Inc.

In 2016, we obtained a majority equity ownership interest in GRAIL, a company formed with unrelated third-party investors to develop a blood test for early-stage cancer detection. At that time, we determined that GRAIL was a VIE as the entity lacked sufficient equity to finance its activities without additional support. Additionally, we determined that we were the primary beneficiary of GRAIL and were required to consolidate GRAIL. On February 28, 2017, GRAIL completed the initial close of its Series B preferred stock financing, we ceased to have a controlling financial interest in GRAIL, and our equity ownership was reduced from 52% to 19%. Additionally, our voting interest was reduced to 13% and we no longer had representation on GRAIL's board of directors. As a result, we deconsolidated GRAIL's financial statements effective February 28, 2017 and recorded a pretax gain on deconsolidation of $453 million in other income, net.

Fair Value Measurements

The following table presents the hierarchy for assets and liabilities measured at fair value on a recurring basis:

	December 29, 2019				December 30, 2018			
In millions	**Level 1**	**Level 2**	**Level 3**	**Total**	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets:								
Money market funds (cash equivalents)	**$ 1,732**	**$ —**	**$ —**	**$ 1,732**	$ 832	$ —	$ —	$ 832
Debt securities in government-sponsored entities	**—**	**18**	**—**	**18**	—	21	—	21
Corporate debt securities	**—**	**630**	**—**	**630**	—	1,058	—	1,058
U.S. Treasury securities	**618**	**—**	**—**	**618**	1,250	—	—	1,250
Marketable equity securities	**106**	**—**	**—**	**106**	39	—	—	39
Contingent value right	**—**	**—**	**29**	**29**	—	—	—	—
Continuation Advances	**—**	**—**	**10**	**10**	—	—	—	—
Deferred compensation plan assets	**—**	**48**	**—**	**48**	—	34	—	34
Total assets measured at fair value	**$ 2,456**	**$ 696**	**$ 39**	**$ 3,191**	$ 2,121	$ 1,113	$ —	$ 3,234
Liabilities:								
Deferred compensation plan liability	**$ —**	**$ 46**	**$ —**	**$ 46**	$ —	$ 33	$ —	$ 33

We hold available-for-sale securities that consist of highly-liquid, investment-grade debt securities and marketable equity securities. We consider information provided by our investment accounting and reporting service provider in the measurement of fair value of our debt securities. The investment service provider provides valuation information from an industry-recognized valuation service. Such valuations may be based on trade prices in active markets for identical assets or liabilities (Level 1 inputs) or valuation models using inputs that are observable either directly or indirectly (Level 2 inputs), such as quoted prices for similar assets or liabilities, yield curve, volatility factors, credit spreads, default rates, loss severity, current market and contractual prices for the underlying instruments or debt, broker and dealer quotes, as well as other relevant economic measures. Our marketable equity securities are measured at fair value based on quoted trade prices in active markets. Our deferred compensation plan assets consist primarily of investments in life insurance contracts carried at cash surrender value, which reflects the net asset value of the underlying publicly traded mutual funds. We perform control procedures to corroborate the fair value of our holdings, including comparing valuations obtained from our

investment service provider to valuations reported by our asset custodians, validating pricing sources and models, and reviewing key model inputs, if necessary. We elected the fair value option to measure the contingent value right received from Helix. The fair value of our contingent value right is derived using a Monte Carlo simulation. The Continuation Advances (as defined below), related to the terminated merger agreement with Pacific Biosciences of California, Inc. (PacBio), are a derivative asset measured at fair value. Significant estimates and assumptions required for these valuations include, but are not limited to, probabilities related to the timing and outcome of future financing and/or liquidity events and an assumption regarding collectibility. These unobservable inputs represent a Level 3 measurement because they are supported by little or no market activity and reflect our own assumptions in measuring fair value.

4. INTANGIBLE ASSETS, GOODWILL, AND ACQUISITIONS

Intangible Assets

	December 29, 2019			December 30, 2018		
In millions	**Gross Carrying Amount**	**Accumulated Amortization**	**Intangibles, Net**	**Gross Carrying Amount**	**Accumulated Amortization**	**Intangibles, Net**
Licensed technologies	**$ 95**	**$ (89)**	**$ 6**	$ 95	$ (83)	$ 12
Core technologies	**325**	**(195)**	**130**	331	(172)	159
Customer relationships	**31**	**(27)**	**4**	32	(27)	5
License agreements	**14**	**(10)**	**4**	14	(9)	5
Trade name	**4**	**(3)**	**1**	9	(5)	4
Total intangible assets, net	**$ 469**	**$ (324)**	**$ 145**	$ 481	$ (296)	$ 185

The estimated annual amortization of intangible assets for the next five years is shown in the following table. Actual amortization expense to be reported in future periods could differ from these estimates as a result of acquisitions, divestitures, and asset impairments, among other factors.

In millions	**Estimated Annual Amortization**
2020	$ 29
2021	25
2022	21
2023	20
2024	19
Thereafter	31
Total	$ 145

During 2017, we performed a recoverability test when the planned use of a finite-lived acquired intangible asset changed, resulting in an impairment charge of $18 million recorded in cost of product revenue. Also, during 2017, we recorded a $5 million impairment charge of in-process research and development as the project had no future alternative use. Such impairments were recorded within the Core Illumina reportable segment. See further discussion of our segments in note “11. Segment Information and Geographic Data.”

Goodwill

In millions	Goodwill
Balance as of December 31, 2017	$ 771
Acquisitions	60
Balance as of December 30, 2018	**831**
Helix deconsolidation	**(7)**
Balance as of December 29, 2019	**$ 824**

We performed the annual assessment for goodwill impairment in the second quarter of 2019, noting no impairment.

Acquisitions

Edico Genome

On May 14, 2018, we acquired Edico Genome, a provider of data analysis acceleration solutions for next-generation sequencing (NGS) for total cash consideration of $100 million, net of cash acquired. As a result of this transaction, we recorded $56 million as goodwill within the Core Illumina reportable segment. In addition, we recorded developed technology of $45 million and a trade name of $1 million, with useful lives of 10 and 3 years, respectively.

PacBio

On November 1, 2018, we entered into an Agreement and Plan of Merger (the Merger Agreement) to acquire PacBio for an all-cash price of approximately $1.2 billion (or $8.00 per share). On September 25, 2019, we entered into Amendment No. 1 to the Merger Agreement (the Amendment), which extended the End Time of the Merger Agreement (as defined in the Merger Agreement) to December 31, 2019 and provided that we make cash payments to PacBio of $6 million on or before each of October 1, 2019, November 1, 2019, and December 2, 2019. The Amendment also allowed us to unilaterally extend the End Time date until March 31, 2020 by making additional payments to PacBio totaling $34 million, which we elected to do on December 18, 2019.

On January 2, 2020, we entered into an agreement to terminate the Merger Agreement (the Termination Agreement). Pursuant to the Termination Agreement, we made a cash payment to PacBio of $98 million on January 2, 2020, which represented the Reverse Termination Fee (as defined in the Merger Agreement). Additionally, we made cash payments of $6 million and $22 million on January 2, 2020 and February 3, 2020, respectively, and will make a cash payment of $6 million on or before March 2, 2020. These payments totaling $34 million, along with the $18 million of payments made in the fourth quarter of 2019, are collectively referred to as the Continuation Advances. If PacBio enters into a definitive agreement providing for, or consummates, a Change of Control Transaction by September 30, 2020 (as defined in the Termination Agreement), and such transaction is consummated by the two-year anniversary of the execution of the definitive agreement for such Change of Control Transaction, then the Reverse Termination Fee of $98 million is repayable, without interest, to us. In addition, up to the $52 million of Continuation Advances is repayable without interest to us if, within two years of March 31, 2020, PacBio enters into a Change of Control Transaction or raises at least $100 million in equity or debt financing in a single transaction (with the amount repayable dependent on the amount raised by PacBio).

The potential repayment of the Continuation Advances meets the definition of a derivative asset and is recorded at fair value. As of December 29, 2019, the fair value of the derivative asset related to the $18 million of Continuation Advances paid in 2019 was $10 million, included in other assets. The $8 million difference between the Continuation Advances paid and the fair value of the derivative asset was recorded as selling, general and administrative expenses.

5. DEBT AND OTHER COMMITMENTS

Summary of debt obligations

In millions	December 29, 2019	December 30, 2018
Principal amount of 2023 Notes outstanding	**$ 750**	$ 750
Principal amount of 2021 Notes outstanding	**517**	517
Principal amount of 2019 Notes outstanding	**—**	633
Unamortized discount of liability component of convertible senior notes	**(126)**	(175)
Net carrying amount of liability component of convertible senior notes	**1,141**	1,725
Obligations under financing leases	**—**	269
Other	**—**	3
Less: current portion	**—**	(1,107)
Long-term debt	**$ 1,141**	$ 890
Carrying value of equity component of convertible senior notes, net of debt issuance costs	**$ 213**	$ 287
Fair value of convertible senior notes outstanding (Level 2)	**$ 1,549**	$ 2,222
Weighted average remaining amortization period of discount on the liability component of convertible senior notes	**3.2 years**	3.9 years

0% Convertible Senior Notes due 2023 (2023 Notes)

On August 21, 2018, we issued $750 million aggregate principal amount of convertible senior notes due 2023 (2023 Notes). The net proceeds from the issuance, after deducting the offering expenses payable by us, were $735 million. The 2023 Notes carry no coupon interest and mature on August 15, 2023.

The 2023 Notes will be convertible into cash, shares of our common stock or a combination of cash and shares of our common stock, at our election, based on an initial conversion rate, subject to adjustment, of 2.1845 shares of common stock per $1,000 principal amount of notes (which represents an initial conversion price of approximately $457.77 per share of common stock), only in the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending on September 30, 2018 (and only during such calendar quarter), if the last reported sale price of our common stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price in effect on each applicable trading day; (2) during the five business day period after any 10 consecutive trading day period (the “measurement period”) in which the trading price per $1,000 principal amount of 2023 Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day; (3) if we call any or all of the notes for redemption, at any time prior to the close of business on the scheduled trading day immediately preceding the redemption date; or (4) upon the occurrence of specified corporate events described in the indenture. Regardless of the foregoing circumstances, the holders may convert their notes on or after May 15, 2023 until August 11, 2023.

It is our intent and policy to settle conversions through combination settlement; this involves repayment of an amount of cash equal to the “principal amount” and delivery of the “share amount” in excess of the conversion value over the principal amount in shares of common stock. In general, for each $1,000 in principal, the “principal amount” of cash upon settlement is defined as the lesser of $1,000 and the conversion value during the 20-day observation period. The conversion value is the sum of the daily conversion value, which is the product of the effective conversion rate divided by 20 days and the daily volume weighted average price (VWAP) of our common stock. The “share amount” is the cumulative “daily share amount” during the observation period, which is calculated by dividing the daily VWAP into the difference between the daily conversion value (i.e., conversion rate x daily VWAP) and $1,000.

We may redeem for cash all or any portion of the 2023 Notes, at our option, on or after August 20, 2021 if the last reported sale price of our common stock has been at least 130% of the conversion price then in effect (currently $595.10) for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide notice of redemption at a redemption price equal to 100% of the principal amount of the notes to be redeemed, plus any accrued and unpaid special interest to, but excluding, the redemption date.

The 2023 Notes are accounted for in accordance with authoritative guidance for convertible debt instruments that may be settled in cash upon conversion. The guidance requires the carrying amount of the liability component to be estimated by estimating the fair value of a similar liability that does not have an associated conversion feature. Because we have no outstanding non-convertible public debt, we determined that market-traded senior, unsecured corporate bonds represent a similar liability without a conversion option. Based on market data available for publicly traded, senior, unsecured corporate bonds issued by companies in our industry, and with similar maturities to the 2023 Notes, we estimated an implied interest rate of 3.7%, assuming no conversion option. Assumptions used in the estimate represent what market participants would use in pricing the liability component, including market interest rates, credit standing, and yield curves, all of which are defined as Level 2 observable inputs. The estimated implied interest rate was applied to the 2023 Notes, which resulted in a fair value of the liability component in aggregate of $624 million upon issuance, calculated as the present value of implied future payments based on the $750 million aggregate principal amount. The $126 million difference ($93 million, net of tax) between the aggregate principal amount of $750 million and the estimated fair value of the liability component was recorded in additional paid-in capital as the 2023 Notes are not considered redeemable.

As a policy election under applicable guidance related to the calculation of diluted net income per share, we have elected the combination settlement method as our stated settlement policy and apply the treasury stock method in the calculation of the potential dilutive impact of the 2023 Notes on net income per share each period. The 2023 Notes were not convertible as of December 29, 2019 and had no dilutive impact in 2019 and 2018. If the 2023 Notes were converted as of December 29, 2019, the if-converted value would not exceed the principal amount.

0.5% Convertible Senior Notes due 2021 (2021 Notes)

In June 2014, we issued $517 million aggregate principal amount of convertible senior notes due 2021. The net proceeds from the issuance, after deducting the offering expenses payable by us, were $509 million. We pay 0.5% interest per annum on the principal amount of the 2021 Notes, payable semiannually in arrears in cash on June 15 and December 15 of each year, beginning on December 15, 2014. The 2021 Notes mature on June 15, 2021.

The 2021 Notes will be convertible into cash, shares of common stock, or a combination of cash and shares of common stock, at our election, based on an initial conversion rate, subject to adjustment, of 3.9318 shares per $1,000 principal amount of the notes (which represents an initial conversion price of approximately $254.34 per share), only in the following circumstances: (1) during any calendar quarter commencing after the calendar quarter ending September 30, 2014 (and only during such calendar quarter), if the last reported sale price of our common stock for 20 or more trading days in the period of 30 consecutive trading days ending on the last trading day of the immediately preceding calendar quarter exceeds 130% of the applicable conversion price in effect on the last trading day of the immediately preceding calendar quarter; (2) during the five business day period after any 10 consecutive trading day period (the “measurement period”) in which the trading price per 2021 Notes for each day of such measurement period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day; or (3) upon the occurrence of specified events described in the indenture for the 2021 Notes. Regardless of the foregoing circumstances, the holders may convert their notes on or after March 15, 2021 until June 11, 2021.

It is our intent and policy to settle conversions through combination settlement; this involves repayment of an amount of cash equal to the “principal portion” and delivery of the “share amount” in excess of the conversion value over the principal portion in shares of common stock. In general, for each $1,000 in principal, the “principal portion” of cash upon settlement is defined as the lesser of $1,000 and the conversion value during the 20-day observation period. The conversion value is the sum of the daily conversion value which is the product of the effective conversion rate divided by 20 days and the daily volume weighted average price (VWAP) of our common stock. The “share amount” is the cumulative “daily share amount” during the observation period, which is calculated by

dividing the daily VWAP into the difference between the daily conversion value (i.e., conversion rate x daily VWAP) and $1,000.

The 2021 Notes are accounted for in accordance with authoritative guidance for convertible debt instruments that may be settled in cash upon conversion. The guidance requires the carrying amount of the liability component to be estimated by estimating the fair value of a similar liability that does not have an associated conversion feature. Because we have no outstanding non-convertible public debt, we determined that market-traded senior, unsecured corporate bonds represent a similar liability without the conversion option. Based on market data available for publicly traded, senior, unsecured corporate bonds issued by companies in the same industry as us, and with similar maturities to the 2021 Notes, we estimated the implied interest rate of our 2021 Notes to be 3.5%, assuming no conversion option. Assumptions used in the estimate represent what market participants would use in pricing the liability component, including market interest rates, credit standing, and yield curves, all of which are defined as Level 2 observable inputs. The estimated implied interest rate was applied to the 2021 Notes, which resulted in a fair value of the liability component in aggregate of $423 million upon issuance, calculated as the present value of implied future payments based on the $517 million aggregate principal amount. The $87 million difference between the cash proceeds of $510 million and the estimated fair value of the liability component was recorded in additional paid-in capital as the 2021 Notes are not considered redeemable.

As a policy election under applicable guidance related to the calculation of diluted net income per share, we elected the combination settlement method as our stated settlement policy and apply the treasury stock method in the calculation of the potential dilutive impact of the 2021 Notes. The potential dilutive impact of the 2021 notes has been included in our calculation of diluted earnings per share in 2019 and 2018. If the 2021 Notes were converted as of December 29, 2019, the if-converted value would exceed the principal amount by $146 million.

During 2018, the market price of our common stock met the stock trading price conversion requirement resulting in the 2021 Notes being convertible as of December 30, 2018 and included in long-term debt, current portion on the consolidated balance sheet. The 2021 Notes were not convertible as of December 29, 2019 and are included in long-term debt on the consolidated balance sheet.

0% Convertible Senior Notes due 2019 (2019 Notes)

In June 2014, we issued $633 million aggregate principal amount of 2019 Notes, and the implied estimated effective rate of the liability component of the Notes was 2.9%, assuming no conversion option. The net proceeds from the issuance, after deducting the offering expenses payable by us, were $623 million. The $74 million difference between the cash proceeds of $623 million and the estimated fair value of the liability component of $549 million was recorded in additional paid-in capital as the 2019 Notes were not considered redeemable. The 2019 Notes matured on June 15, 2019, by which time the principal had been converted and was repaid in cash. The excess of the conversion value over the principal amount was paid in shares of common stock.

The following table summarizes information about the conversion of the 2019 Notes during 2019:

In millions		
Cash paid for principal of notes converted	$	633
Conversion value over principal amount, paid in shares of common stock	$	153
Number of shares of common stock issued upon conversion		0.4

Leases

As of December 29, 2019, the maturities of our operating lease liabilities were as follows:

In millions	
2020	$ 77
2021	83
2022	85
2023	86
2024	85
Thereafter	554
Total remaining lease payments (1)	970
Less: imputed interest	(230)
Total operating lease liabilities	740
Less: current portion	(45)
Long-term operating lease liabilities	$ 695
Weighted-average remaining lease term	11.4 years
Weighted-average discount rate	4.6%

(1) Total remaining lease payments exclude $44 million of legally binding minimum lease payments for leases signed but not yet commenced.

As of December 30, 2018, prior to the adoption of Topic 842, annual future minimum payments of our operating leases and build-to-suit leases, which include those leases accounted for as a financing obligation, were as follows:

In millions	Operating Leases	Sublease Income	Net Operating Leases	Build-to-suit Leases
2019	$ 59	$ (11)	$ 48	$ 18
2020	64	(11)	53	21
2021	61	(11)	50	21
2022	61	(12)	49	22
2023	61	(11)	50	22
Thereafter	439	(12)	427	179
Total minimum lease payments	$ 745	$ (68)	$ 677	$ 283

The components of our lease costs were as follows:

In millions	2019
Operating lease costs	$ 84
Sublease income	(12)
Total lease costs	$ 72

Rent expense was $55 million and $46 million in 2018 and 2017, respectively, and the interest portion of lease expense for our build-to-suit arrangements was $13 million in 2018. As of December 30, 2018, we had obligations under financing leases of $269 million, representing project construction costs paid or reimbursed by our landlord for build-to-suit leases that did not qualify for sale-leaseback accounting under Topic 840. Additionally, as of December 30, 2018, the deferred rent balance related to our operating leases was $123 million, of which the long-term portion of $119 million was recorded in other long-term liabilities. Upon adoption of Topic 842 on December 31, 2018, we began to account for our build-to-suit arrangements as operating leases, derecognized the remaining obligations under financing leases, and reclassified the deferred rent balance related to our operating leases to

operating lease right-of-use assets. See note "1. Organization and Significant Accounting Policies" for further details on the adoption of Topic 842.

Purchase Obligations

In the normal course of business, we enter into agreements to purchase goods or services that are not cancelable without penalty, primarily related to licensing and supply arrangements. For those agreements with variable terms, we do not estimate the total obligation beyond any minimum quantities or pricing as of the reporting date. Licensing agreements under which we commit to minimum royalty payments, some of which are subject to adjustment, may be terminated prior to the expiration of underlying intellectual property under certain circumstances. Annual minimum payments for noncancelable purchase obligations as of December 29, 2019 were not material.

6. STOCKHOLDERS' EQUITY

The 2015 Stock and Incentive Compensation Plan (the 2015 Stock Plan) and the New Hire Stock and Incentive Plan allow for the issuance of stock options, restricted stock units and awards, and performance stock units. As of December 29, 2019, approximately 4.3 million shares remained available for future grants under the 2015 Stock Plan. There is no set number of shares reserved for issuance under the New Hire Stock and Incentive Plan.

Restricted Stock

We issue restricted stock units (RSU) and performance stock units (PSU), both of which are considered restricted stock. We grant restricted stock pursuant to the 2015 Stock Plan and satisfy such grants through the issuance of new shares. RSU are share awards that, upon vesting, will deliver to the holder shares of our common stock. RSU generally vest over a four-year period with equal vesting on anniversaries of the grant date. We issue PSU for which the number of shares issuable at the end of a three-year performance period can reach up to 150% of the shares approved in the award based on our performance relative to specified earnings per share targets and continued employment through the vesting period.

Restricted stock activity was as follows:

Units in thousands	Restricted Stock Units (RSU)	Performance Stock Units (PSU)(1)	Weighted-Average Grant-Date Fair Value per Share	
			RSU	PSU
Outstanding at January 1, 2017	2,293	460	$ 141.80	$ 158.66
Awarded	879	238	$ 207.38	$ 191.53
Vested	(861)	(92)	$ 131.62	$ 189.09
Cancelled	(226)	(64)	$ 149.03	$ 173.83
Outstanding at December 31, 2017	2,085	542	$ 172.92	$ 166.15
Awarded	655	336	$ 322.04	$ 232.08
Vested	(731)	(188)	$ 170.50	$ 176.15
Cancelled	(169)	(30)	$ 172.30	$ 162.54
Outstanding at December 30, 2018	**1,840**	**660**	**$ 227.00**	**$ 196.99**
Awarded	**698**	**(41)**	**$ 313.70**	**$ 254.52**
Vested	**(694)**	**(283)**	**$ 205.51**	**$ 133.11**
Cancelled	**(144)**	**(65)**	**$ 225.48**	**$ 181.79**
Outstanding at December 29, 2019	**1,700**	**271**	**$ 271.49**	**$ 258.66**

(1) The number of units reflect the estimated number of shares to be issued at the end of the performance period.

Pre-tax intrinsic values and fair value of vested restricted stock was as follows:

In millions	2019	2018	2017
Pre-tax intrinsic value of outstanding restricted stock:			
RSU	**$ 565**	$ 549	$ 456
PSU	**$ 90**	$ 197	$ 118
Fair value of restricted stock vested:			
RSU	**$ 210**	$ 125	$ 113
PSU	**$ 38**	$ 33	$ 17

Stock Options

Stock option activity was as follows:

	Options (in thousands)	Weighted-Average Exercise Price
Outstanding at January 1, 2017	1,045	$ 48.56
Exercised	(723)	$ 49.31
Outstanding at December 31, 2017	322	$ 46.93
Exercised	(130)	$ 35.68
Outstanding at December 30, 2018	**192**	**$ 54.52**
Exercised	**(134)**	**$ 53.61**
Outstanding and exercisable at December 29, 2019	**58**	**$ 56.65**

The weighted-average remaining life of options outstanding and exercisable was 1.2 years as of December 29, 2019.

The aggregate intrinsic value of options outstanding and options exercisable as of December 29, 2019 was $16 million. Aggregate intrinsic value represents the product of the number of options outstanding multiplied by the difference between our closing stock price per share on the last trading day of the fiscal period, which was $332.29 as of December 27, 2019, and the exercise price. Total intrinsic value of options exercised was $34 million, $33 million, and $101 million in 2019, 2018, and 2017, respectively.

Employee Stock Purchase Plan

A total of 15.5 million shares of our common stock have been reserved for issuance under our 2000 Employee Stock Purchase Plan, or ESPP. The ESPP permits eligible employees to purchase common stock at a discount through payroll deductions during defined offering periods. The price at which stock is purchased under the ESPP is equal to 85% of the fair market value of the common stock on the first day of the offering period or purchase date, whichever is lower. The initial offering period commenced in July 2000.

Approximately 0.2 million, 0.3 million, and 0.3 million shares were issued under the ESPP during 2019, 2018, and 2017, respectively. As of December 29, 2019 and December 30, 2018, there were approximately 13.5 million and 13.7 million shares available for issuance under the ESPP, respectively.

Share Repurchases

During 2019, 2018, and 2017, we repurchased approximately 1.1 million shares for $324 million, 0.6 million shares for $201 million (of which 0.3 million shares for $103 million was repurchased concurrently with the offering of our 2023 Notes), and 1.4 million shares for $251 million, respectively. As of December 29, 2019, authorizations to repurchase $226 million of our common stock remained available under the $550 million share repurchase program authorized by our Board of Directors on February 6, 2019. On February 5, 2020, our Board of Directors authorized a new share repurchase program, which superseded all prior and available repurchase authorizations, to repurchase $750 million of outstanding common stock. The repurchases may be completed under a 10b5-1 plan or at management's discretion.

Share-based Compensation

Share-based compensation expense reported in our consolidated statements of income was as follows:

In millions	2019	2018	2017
Cost of product revenue	**$ 19**	$ 16	$ 12
Cost of service and other revenue	**4**	3	2
Research and development	**66**	60	51
Selling, general and administrative	**105**	114	99
Share-based compensation expense, before taxes	**194**	193	164
Related income tax benefits	**(41)**	(39)	(48)
Share-based compensation expense, net of taxes	**$ 153**	$ 154	$ 116

The assumptions used for the specified reporting periods and the resulting estimates of weighted-average fair value per share for stock purchased under the ESPP were as follows:

	2019	2018	2017
Risk-free interest rate	**1.88% - 2.56%**	1.22% - 2.45%	0.50% - 1.22%
Expected volatility	**30% - 38%**	29% - 39%	29% - 44%
Expected term	**0.5 - 1.0 year**	0.5 - 1.0 year	0.5 - 1.0 year
Expected dividends	**0%**	0%	0%
Weighted-average grant-date fair value per share	**$ 75.47**	$ 61.59	$ 46.81

As of December 29, 2019, approximately $463 million of total unrecognized compensation cost related to restricted stock and ESPP shares issued to date was expected to be recognized over a weighted-average period of approximately 2.6 years.

7. SUPPLEMENTAL BALANCE SHEET DETAILS

Accounts Receivable

in millions	December 29, 2019	December 30, 2018
Trade accounts receivable, gross	**$ 575**	$ 516
Allowance for doubtful accounts	**(2)**	(2)
Total accounts receivable, net	**$ 573**	$ 514

Inventory

in millions	December 29, 2019	December 30, 2018
Raw materials	**$ 108**	$ 117
Work in process	**225**	218
Finished goods	**26**	51
Total inventory	**$ 359**	$ 386

Property and Equipment

in millions	December 29, 2019	December 30, 2018
Leasehold improvements	**$ 622**	$ 567
Machinery and equipment	**401**	382
Computer hardware and software	**272**	217
Furniture and fixtures	**45**	45
Buildings	**44**	285
Construction in progress	**73**	100
Total property and equipment, gross	**1,457**	1,596
Accumulated depreciation	**(568)**	(521)
Total property and equipment, net	**$ 889**	$ 1,075

Property and equipment, net included non-cash expenditures of $20 million, $35 million and $117 million in 2019, 2018, and 2017, respectively, which were excluded from the consolidated statements of cash flows. Such non-cash expenditures included $18 million and $79 million recorded under build-to-suit lease accounting in 2018 and 2017, respectively.

As of December 30, 2018, property and equipment, net included $241 million of project construction costs paid or reimbursed by our landlord related to our build-to-suit leases that did not qualify for sale-leaseback accounting under Topic 840. Upon adoption of Topic 842 on December 31, 2018, we derecognized the Buildings related to our build-to-suit leasing arrangements and began to account for these leases as operating leases. See note "1. Organization and Significant Accounting Policies" for further details on the adoption impact of Topic 842.

Accrued Liabilities

in millions	December 29, 2019	December 30, 2018
Contract liabilities, current portion	**$ 167**	$ 175
Accrued compensation expenses	**154**	193
Accrued taxes payable	**86**	82
Operating lease liabilities, current portion	**45**	—
Other, including warranties (a)	**64**	63
Total accrued liabilities	**$ 516**	$ 513

(a) Changes in the reserve for product warranties were as follows:

in millions		
Balance as of January 1, 2017	$	13
Additions charged to cost of revenue		26
Repairs and replacements		(22)
Balance as of December 31, 2017		17
Additions charged to cost of revenue		27
Repairs and replacements		(25)
Balance as of December 30, 2018		**19**
Additions charged to cost of revenue		**20**
Repairs and replacements		**(25)**
Balance as of December 29, 2019	**$**	**14**

Redeemable Noncontrolling Interests

Changes in the redeemable noncontrolling interest were as follows:

in millions		
Balance as of January 1, 2017	$	44
Amount released from escrow		79
Vesting of redeemable equity awards		13
Net loss attributable to noncontrolling interests		(41)
Adjustment up to the redemption value		136
Deconsolidation of GRAIL		(11)
Balance as of December 31, 2017	$	220
Vesting of redeemable equity awards		2
Net loss attributable to noncontrolling interests		(34)
Adjustment down to the redemption value		(127)
Balance as of December 30, 2018		**61**
Vesting of redeemable equity awards		**1**
Net loss attributable to noncontrolling interests		**(9)**
Adjustment down to the redemption value		**(16)**
Release of potential obligation to noncontrolling interests		**(37)**
Balance as of December 29, 2019	**$**	**—**

Accumulated Other Comprehensive Income (Loss)

in millions	**December 29, 2019**	**December 30, 2018**
Foreign currency translation adjustments	**$ 1**	$ 1
Unrealized gain (loss) on available-for-sale debt securities, net of deferred tax	**4**	(2)
Total accumulated other comprehensive income (loss)	**$ 5**	$ (1)

8. LEGAL PROCEEDINGS

We are involved in various lawsuits and claims arising in the ordinary course of business, including actions with respect to intellectual

property, employment, and contractual matters. In connection with these matters, we assess, on a regular basis, the probability and range of possible loss based on the developments in these matters. A liability

is recorded in the consolidated financial statements if it is believed to be probable that a loss has been incurred and the amount of the loss can be reasonably estimated. Because litigation is inherently unpredictable and unfavorable resolutions could occur, assessing contingencies is highly subjective and requires judgments about future events. We regularly review outstanding legal matters to determine the adequacy of the liabilities accrued and related disclosures in consideration of many factors, which include, but are not limited to, past history, scientific and other evidence, and the specifics and status of each matter. We may change our estimates if our assessment of the various factors changes and the amount of ultimate loss may differ from our estimates, resulting in a material effect on our business, financial condition, results of operations, and/or cash flows.

9. INCOME TAXES

Income before income taxes summarized by region was as follows:

In millions	2019	2018	2017
United States	**$ 242**	$ 54	$ 458
Foreign	**876**	840	585
Total income before income taxes	**$ 1,118**	$ 894	$ 1,043

The provision for income taxes consisted of the following:

In millions	2019	2018	2017
Current:			
Federal	**$ 32**	$ 47	$ 259
State	**7**	15	21
Foreign	**84**	68	51
Total current provision	**123**	130	331
Deferred:			
Federal	**1**	—	36
State	**(1)**	(16)	—
Foreign	**5**	(2)	(2)
Total deferred expense (benefit)	**5**	(18)	34
Total tax provision	**$ 128**	$ 112	$ 365

The provision for income taxes reconciles to the amount computed by applying the federal statutory rate to income before taxes as follows:

In millions	2019	2018	2017
Tax at federal statutory rate	**$ 235**	$ 188	$ 365
State, net of federal benefit	**18**	13	19
Research and other credits	**(37)**	(23)	(12)
Change in valuation allowance	**(2)**	(12)	12
Impact of foreign operations	**(57)**	(59)	(130)
Investments in consolidated variable interest entities	**(5)**	9	(3)
Impact of U.S. Tax Reform	**—**	11	150
Stock compensation	**(20)**	(24)	(41)
Other	**(4)**	9	5
Total tax provision	**$ 128**	$ 112	$ 365

The determination of the impact of the Tax Cuts and Jobs Act that was enacted on December 22, 2017 (U.S. Tax Reform) may change following future legislation or further interpretation of the U.S. Tax Reform based on the

publication of proposed U.S. Treasury regulations and guidance from the Internal Revenue Service and state tax authorities. We continue to evaluate the impacts of U.S. Tax Reform as we interpret the legislation, including the global intangible low-taxed income (GILTI) provisions which subject our foreign earnings to a minimum level of tax. We have elected to account for GILTI as a period cost in our consolidated financial statements.

The impact of foreign operations primarily represents the difference between the actual provision for income taxes for our legal entities that operate primarily in jurisdictions that have statutory tax rates lower than the U.S. federal statutory tax rate of 21%. The most significant tax benefits from foreign operations were from our earnings in Singapore and the United Kingdom, which had statutory tax rates of 17% and 19%, respectively, in 2019. The impact of foreign operations also includes the U.S. foreign tax credit impact of non-U.S. earnings and uncertain tax positions related to foreign items.

Significant components of deferred tax assets and liabilities were as follows:

In millions	December 29, 2019	December 30, 2018
Deferred tax assets:		
Net operating losses	**$ 21**	$ 26
Tax credits	**63**	63
Other accruals and reserves	**12**	28
Stock compensation	**20**	20
Deferred rent	**—**	30
Cost sharing adjustment	**21**	21
Other amortization	**16**	13
Obligations under financing leases	**—**	70
Operating lease liabilities	**158**	—
Investments	**2**	1
Other	**45**	28
Total gross deferred tax assets	**358**	300
Valuation allowance on deferred tax assets	**(13)**	(15)
Total deferred tax assets	**345**	285
Deferred tax liabilities:		
Purchased intangible amortization	**(27)**	(32)
Convertible debt	**(30)**	(41)
Property and equipment	**(47)**	(94)
Operating lease right-of-use assets	**(111)**	—
Investments	**(62)**	(45)
Other	**(5)**	(3)
Total deferred tax liabilities	**(282)**	(215)
Deferred tax assets, net	**$ 63**	$ 70

A valuation allowance is established when it is more likely than not the future realization of all or some of the deferred tax assets will not be achieved. The evaluation of the need for a valuation allowance is performed on a jurisdiction-by-jurisdiction basis and includes a review of all available positive and negative evidence. Based on the available evidence as of December 29, 2019, we were not able to conclude it is more likely than not certain deferred tax assets will be realized. Therefore, a valuation allowance of $13 million was recorded against certain U.S. and foreign deferred tax assets.

As of December 29, 2019, we had net operating loss carryforwards for federal and state tax purposes of $29 million and $115 million, respectively, which will begin to expire in 2020 and 2025, respectively, unless utilized prior. We

also had federal and state tax credit carryforwards of $1 million and $106 million, which will begin to expire in 2037 and 2022, respectively, unless utilized prior.

Pursuant to Section 382 and 383 of the Internal Revenue Code, utilization of net operating losses and credits may be subject to annual limitations in the event of any significant future changes in its ownership structure. These annual limitations may result in the expiration of net operating losses and credits prior to utilization. The deferred tax assets as of December 29, 2019 are net of any previous limitations due to Section 382 and 383.

Our manufacturing operations in Singapore operate under various tax holidays and incentives that begin to expire in 2023. These tax holidays and incentives resulted in a $33 million, $36 million, and $49 million decrease to the provision for income taxes in 2019, 2018, and 2017, respectively. These tax holidays and incentives resulted in an increase in diluted earnings per share attributable to Illumina stockholders of $0.22, $0.24, and $0.33, in 2019, 2018, and 2017, respectively.

It is our intention to indefinitely reinvest the historical earnings of our foreign subsidiaries generated prior to 2017 to ensure sufficient working capital and to expand existing operations outside the United States. Accordingly, state and foreign income and withholding taxes have not been provided on $889 million of undistributed earnings of foreign subsidiaries as of December 29, 2019. In the event we are required to repatriate funds from outside of the United States, such repatriation would be subject to local laws, customs, and tax consequences. As of December 29, 2019, we asserted that $331 million of foreign earnings would not be indefinitely reinvested, and accordingly, recorded a deferred tax liability of $5 million.

The following table summarizes the gross amount of our uncertain tax positions:

In millions	**December 29, 2019**	**December 30, 2018**	**December 31, 2017**
Balance at beginning of year	**$ 88**	$ 79	$ 65
Increases related to prior year tax positions	**1**	1	2
Decreases related to prior year tax positions	**—**	(1)	—
Increases related to current year tax positions	**12**	12	14
Decreases related to lapse of statute of limitations	**(22)**	(3)	(2)
Balance at end of year	**$ 79**	$ 88	$ 79

Included in the balance of uncertain tax positions as of December 29, 2019 and December 30, 2018, were $68 million and $78 million, respectively, of net unrecognized tax benefits that, if recognized, would reduce the effective income tax rate in future periods.

Any interest and penalties related to uncertain tax positions are reflected in the provision for income taxes. We recognized income of $3 million in 2019 and recognized expense of $3 million and $1 million in 2018 and 2017, respectively, related to potential interest and penalties on uncertain tax positions. We recorded a liability for potential interest and penalties of $7 million and $11 million as of December 29, 2019 and December 30, 2018, respectively.

Tax years 1997 to 2018 remain subject to future examination by the major tax jurisdictions in which we are subject to tax. Given the uncertainty of potential adjustments from examination as well as the potential expiration of the statute of limitations, it is reasonably possible that the balance of unrecognized tax benefits could change significantly over the next 12 months. Due to the number of years remaining that are subject to examination, we are unable to estimate the full range of possible adjustments to the balance of gross unrecognized tax benefits.

10. EMPLOYEE BENEFIT PLANS

Retirement Plan

We have a 401(k) savings plan covering substantially all of our employees in the United States. Our contributions to the plan are discretionary. During 2019, 2018, and 2017, we made matching contributions of $20 million, $20 million, and $17 million, respectively.

Deferred Compensation Plan

The Illumina, Inc. Deferred Compensation Plan (the Plan) allows senior level employees to contribute up to 60% of their base salary and 100% of their variable cash compensation, and members of the board of directors to contribute up to 100% of their director fees and equity awards. Under the Plan, we credit the participants' contributions with earnings that reflect the performance of certain independent investment funds. On a discretionary basis, we may also make employer contributions to participant accounts in any amount determined by us. The vesting schedules of employer contributions are at the sole discretion of the Compensation Committee. However, all employer contributions shall become 100% vested upon the occurrence of the participant's disability, death or retirement or a change in control of Illumina. The benefits under this plan are unsecured. Participants are generally eligible to receive payment of their vested benefit at the end of their elected deferral period or after termination of their employment for any reason or at a later date to comply with the restrictions of Section 409A.

We also established a rabbi trust for the benefit of the participants under the Plan and have included the assets of the rabbi trust in the consolidated balance sheets. As of December 29, 2019 and December 30, 2018, the assets of the trust were $48 million and $34 million, respectively, and our liabilities were $46 million and $33 million, respectively. The assets and liabilities are classified as other assets and accrued liabilities, respectively, on the consolidated balance sheets. Changes in the values of the assets held by the rabbi trust are recorded in other income, net in the consolidated statements of income, and changes in the values of the deferred compensation liabilities are recorded in cost of revenue or operating expenses.

11. SEGMENTS AND GEOGRAPHIC DATA

Reportable Segment Information

We have one reportable segment as of December 29, 2019, Core Illumina, which relates to Illumina's core operations. Prior to the Helix deconsolidation on April 25, 2019, our reportable segments included both Core Illumina and Consolidated VIEs (Helix) and prior to the deconsolidation of GRAIL on February 28, 2017, our Consolidated VIEs included the combined operations of Helix and GRAIL. See note "3. Investments and Fair Value Measurements" for further details.

***Core Illumina*:**

Core Illumina's products and services serve customers in the research, clinical and applied markets, and enable the adoption of a variety of genomic solutions. Core Illumina includes all of our operations, excluding the results of our consolidated VIEs.

Consolidated VIEs:

***Helix*:** Helix was established to enable individuals to explore their genetic information by providing affordable sequencing and database services for consumers through third-party partners, driving the creation of an ecosystem of consumer applications.

***GRAIL*:** GRAIL was created to develop a blood test for early-stage cancer detection. GRAIL was in the early stages of developing this test and as such, had no revenues through the date of deconsolidation on February 28, 2017.

Core Illumina sells products and provides services to Helix and GRAIL in accordance with contractual agreements between the entities.

In millions	2019	2018	2017
Revenue:			
Core Illumina	**$ 3,543**	$ 3,334	$ 2,754
Consolidated VIEs	**1**	10	6
Eliminations	**(1)**	(11)	(8)
Consolidated revenue	**$ 3,543**	$ 3,333	$ 2,752
Depreciation and amortization:			
Core Illumina	**$ 186**	$ 175	$ 153
Consolidated VIEs	**3**	6	6
Eliminations	**(1)**	(2)	(3)
Consolidated depreciation and amortization	**$ 188**	$ 179	$ 156
Income (loss) from operations:			
Core Illumina	**$ 1,008**	$ 970	$ 696
Consolidated VIEs	**(24)**	(90)	(92)
Eliminations	**1**	3	2
Consolidated income from operations	**$ 985**	$ 883	$ 606

In millions	December 29, 2019	December 30, 2018	December 31, 2017
Total assets:			
Core Illumina	**$ 7,316**	$ 6,912	$ 5,223
Consolidated VIEs	**—**	154	45
Eliminations	**—**	(107)	(11)
Consolidated total assets	**$ 7,316**	$ 6,959	$ 5,257
Capital expenditures:			
Core Illumina	**$ 209**	$ 294	$ 306
Consolidated VIEs	**—**	2	4
Consolidated capital expenditures	**$ 209**	$ 296	$ 310

Geographic Data

Net long-lived assets, consisting of property and equipment, by region was as follows:

In millions	December 29, 2019	December 30, 2018
United States	**$ 696**	$ 907
Singapore	**112**	96
United Kingdom	**62**	62
Other countries	**19**	10
Total	**$ 889**	$ 1,075

Net long-lived assets exclude goodwill and other intangible assets since they are not allocated on a geographic basis.

Refer to note "2. Revenue" for revenue by geographic area.

12. QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

The following financial information reflects all normal recurring adjustments, which are, in the opinion of management, necessary for a fair statement of the results and cash flows of interim periods. All quarters for 2019 and 2018, were 13 weeks.

In millions (except per share amounts)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2019				
Total revenue	**$ 846**	**$ 838**	**$ 907**	**$ 953**
Gross profit	**$ 584**	**$ 573**	**$ 648**	**$ 662**
Consolidated net income	**$ 224**	**$ 293**	**$ 234**	**$ 239**
Net income attributable to Illumina stockholders	**$ 233**	**$ 296**	**$ 234**	**$ 239**
Earnings per share attributable to Illumina stockholders:				
Basic	**$ 1.58**	**$ 2.01**	**$ 1.59**	**$ 1.63**
Diluted	**$ 1.57**	**$ 1.99**	**$ 1.58**	**$ 1.61**
2018				
Total revenue	$ 782	$ 830	$ 853	$ 867
Gross profit	$ 538	$ 575	$ 597	$ 590
Consolidated net income	$ 197	$ 200	$ 188	$ 198
Net income attributable to Illumina stockholders	$ 208	$ 209	$ 199	$ 210
Earnings per share attributable to Illumina stockholders:				
Basic	$ 1.42	$ 1.42	$ 1.35	$ 1.43
Diluted	$ 1.41	$ 1.41	$ 1.33	$ 1.41

Certain amounts may not recalculate using the rounded amounts provided.

CONTROLS AND PROCEDURES

We design our internal controls to provide reasonable assurance that (1) our transactions are properly authorized; (2) our assets are safeguarded against unauthorized or improper use; and (3) our transactions are properly recorded and reported in conformity with U.S. generally accepted accounting principles. We also maintain internal controls and procedures to ensure that we comply with applicable laws and our established financial policies.

Our management, under the supervision and with the participation of our chief executive officer (CEO) and chief financial officer (CFO), has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a- 15(e) and 15d- 15(e) under the Securities Exchange Act of 1934, as amended (Exchange Act)), as of the end of the period covered by this Annual Report on Form 10-K. Based on such evaluation, our CEO and CFO have concluded that as of December 29, 2019 , our disclosure controls and procedures are designed at a reasonable assurance level and are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the rules and forms of the Securities and Exchange Commission (SEC), and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure.

During the fourth quarter of 2019, we continued to monitor and evaluate the design and operating effectiveness of key controls. There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) that materially affected or are reasonably likely to materially affect internal control over financial reporting.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f). Because of its inherent limitations, internal control over financial reporting may not prevent or detect all misstatements. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

We conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on this evaluation, our management has concluded that our internal control over financial reporting was effective as of December 29, 2019. The effectiveness of our internal control over financial reporting as of December 29, 2019 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their report which is included herein.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Stockholders of Illumina, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Illumina, Inc.'s internal control over financial reporting as of December 29, 2019, based on criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Illumina, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 29, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of Illumina, Inc. as of December 29, 2019 and December 30, 2018, the related consolidated statements of income, comprehensive income, stockholders' equity, and cash flows for each of the three years in the period ended December 29, 2019, and the related notes and our report dated February 10, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

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

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ ERNST & YOUNG LLP

San Diego, California
February 10, 2020

DIRECTORS, EXECUTIVE OFFICERS, AND CORPORATE GOVERNANCE

Directors

Information concerning our directors is incorporated by reference from the section entitled “Proposal One: Election of Directors,” “Information About Directors,” “Director Compensation,” and “Board of Directors and Corporate Governance” to be contained in our definitive Proxy Statement with respect to our 2020 Annual Meeting of Stockholders to be filed with the SEC no later than April 27, 2020.

Executive Officers

Information concerning our executive officers is incorporated by reference from the section entitled “Executive Officers” to be contained in our definitive Proxy Statement with respect to our 2020 Annual Meeting of Stockholders to be filed with the SEC no later than April 27, 2020.

Corporate Governance

Section 16(a) of the Exchange Act

Information concerning compliance with Section 16(a) of the Securities Exchange Act of 1934 is incorporated by reference from the section entitled “Section 16(a) Beneficial Ownership Reporting Compliance” to be contained in our definitive Proxy Statement with respect to our 2020 Annual Meeting of Stockholders to be filed with the SEC no later than April 27, 2020.

Audit Committee Financial Expert

Information concerning the audit committee financial expert as defined by the SEC rules adopted pursuant to the Sarbanes-Oxley Act of 2002 is incorporated by reference from the section entitled “Board of Directors and Corporate Governance” to be contained in our definitive Proxy Statement with respect to our 2020 Annual Meeting of Stockholders to be filed with the SEC no later than April 27, 2020.

Code of Conduct

We have a code of conduct for our directors, officers, and employees, which is available on our website at www.illumina.com in the Corporate Governance portal of the Investor Information section under “Company.” A copy of the Code of Conduct is available in print free of charge to any stockholder who requests a copy. Interested parties may address a written request for a printed copy of the Code of Ethics to: Corporate Secretary, Illumina, Inc., 5200 Illumina Way, San Diego, California 92122. We intend to satisfy the disclosure requirement regarding any amendment to, or a waiver from, a provision of the Code of Ethics for our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions, by posting such information on our website. The information on, or that can be accessed from, our website is not incorporated by reference into this report.

EXECUTIVE COMPENSATION

Information concerning executive compensation is incorporated by reference from the sections entitled “Compensation Discussion and Analysis,” “Director Compensation,” and “Executive Compensation” to be contained in our definitive Proxy Statement with respect to our 2020 Annual Meeting of Stockholders to be filed with the SEC no later than April 27, 2020.

SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information concerning the security ownership of certain beneficial owners and management and information covering securities authorized for issuance under equity compensation plans is incorporated by reference from the sections entitled “Stock Ownership of Principal Stockholders and Management,” “Executive Compensation,” and “Equity Compensation Plan Information” to be contained in our definitive Proxy Statement with respect to our 2020 Annual Meeting of Stockholders to be filed with the SEC no later than April 27, 2020.

CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information concerning certain relationships and related transactions, and director independence is incorporated by reference from the sections entitled “Proposal One: Election of Directors,” “Information About Directors,” “Director Compensation,” “Executive Compensation,” and “Certain Relationships and Related Party Transactions” to be contained in our definitive Proxy Statement with respect to our 2020 Annual Meeting of Stockholders to be filed with the SEC no later than April 27, 2020.

PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information concerning principal accountant fees and services is incorporated by reference from the sections entitled “Proposal Two: Ratification of Appointment of Independent Registered Public Accounting Firm” and “Independent Registered Public Accountants” to be contained in our definitive Proxy Statement with respect to our 2020 Annual Meeting of Stockholders to be filed with the SEC no later than April 27, 2020.

EXHIBITS, FINANCIAL STATEMENT SCHEDULES

Exhibits

The exhibits listed in the accompanying “Index to Exhibits” below are filed or incorporated by reference as part of this report.

Financial Statements

See “Index to Consolidated Financial Statements” within the Consolidated Financial Statements section of this report.

Financial Statement Schedules

All financial schedules have been omitted as the required information is not applicable, not material, or because the information required is included in the consolidated financial statements and notes thereto included in the Consolidated Financial Statements section of this report.

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Index to Exhibits

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed Herewith
		Form	File Number	Exhibit	Filing Date	
2.1	Agreement and Plan of Merger, dated November 1, 2018, by and among Illumina, FC Ops Corp. and Pacific Biosciences of California, Inc.	8-K	001-35406	2.1	11/5/2018	
2.2	Amendment No. 1 to Agreement and Plan of Merger, dated as of September 25, 2019, by and among Illumina, FC Ops Corp. and Pacific Biosciences of California, Inc.	8-K	001-35406	10.1	9/26/2019	
2.3	Agreement by and among Illumina, Pacific Biosciences of California, Inc., and FC Ops Corp., dated January 2, 2020	8-K	001-35406	10.1	1/2/2020	
3.1	Amended and Restated Certificate of Incorporation	10-Q	001-35406	3.3	7/31/2019	
3.2	Amended and Restated Bylaws	10-Q	001-35406	3.4	10/25/2019	
4.1	Specimen Common Stock Certificate	S-1/A	333-33922	4.1	7/3/2000	
4.2	Indenture related to the 0% Convertible Senior Notes due 2019, dated as of June 11, 2014, between Illumina and The Bank of New York Mellon Trust Company, N.A., as trustee	8-K	001-35406	4.1	6/11/2014	
4.3	Indenture related to the 0.5% Convertible Senior Notes due 2021, dated as of June 11, 2014, between Illumina and The Bank of New York Mellon Trust Company, N.A., as trustee	8-K	001-35406	4.2	6/11/2014	
4.4	First Supplemental Indenture related to the 0.5% Convertible Senior Notes due 2021, dated as of August 27, 2014, between Illumina and The Bank of New York Mellon Trust Company, N.A., as trustee	10-Q	001-35406	4.1	10/29/2014	
4.5	Indenture related to the 0% Convertible Senior Notes due 2023, dated as of August 21, 2018, between Illumina and The Bank of New York Mellon Trust Company, N.A., as trustee	8-K	001-35406	4.1	8/21/2018	
+10.1	Form of Indemnification Agreement between Illumina and each of its directors and executive officers	10-Q	000-30361	10.55	7/25/2008	
+10.2	Amended and Restated Change in Control Severance Agreement between Illumina and Jay T Flatley, dated October 22, 2008	10-K	000-30361	10.33	2/26/2009	
+10.3	Form of Change in Control Severance Agreement between Illumina and each of its executive officers	10-K	000-30361	10.34	2/26/2009	
+10.4	2000 Employee Stock Purchase Plan, as amended and restated through February 2, 2012	10-K	001-35406	10.4	2/24/2012	
+10.5	New Hire Stock and Incentive Plan, as amended and restated through October 28,	10-K	000-30361	10.7	2/26/2010	

10.6	License Agreement, effective as of May 6, 1998, between Tufts University and Illumina	10-Q	000-30361	10.5	5/3/2007
+10.7	The Solexa Unapproved Company Share Option Plan	8-K	000-30361	99.3	11/26/2007
+10.7	The Solexa Share Option Plan for Consultants	8-K	000-30361	99.4	11/26/2007
+10.8	Solexa Limited Enterprise Management Incentive Plan	8-K	000-30361	99.5	11/26/2007
+10.9	Amended and Restated Solexa 2005 Equity Incentive Plan	10-K	000-30361	10.25	2/26/2009
+10.10	Amended and Restated Solexa 1992 Stock Option Plan	10-K	000-30361	10.26	2/26/2009
+10.11	2015 Stock and Incentive Plan	10-K	001-35406	10.11	2/13/2018
+10.12	Form of Restricted Stock Unit Agreement for Employees Under 2015 Stock and Incentive Plan	10-K	001-35406	10.12	2/13/2018
10.13	Amended and Restated Lease between BMR-9885 Towne Centre Drive LLC and Illumina for the 9885 Towne Centre Drive property, dated January 26, 2007	10-Q	000-30361	10.41	5/3/2007
10.14	Lease between BMR-9885 Towne Centre Drive LLC and Illumina for the 9865 Towne Centre Drive property, dated January 26, 2007	10-Q	000-30361	10.42	5/3/2007
10.15	Amended and Restated Lease Agreement, dated March 27, 2012, between ARE-SD Region No. 32, LLC and Illumina	10-Q	001-35406	10.1	5/3/2012
10.16	First Amendment to Amended and Restated Lease Agreement, dated March 27, 2012, between ARE-SD Region No. 32, LLC and Illumina	10-K	001-35406	10.23	2/18/2015
10.17	Second Amendment to Amended and Restated Lease Agreement, dated March 27, 2012, between ARE-SD Region No. 32, LLC and Illumina	10-K	001-35406	10.24	2/18/2015
10.18	Amended and Restated Second Amendment to Amended and Restated Lease Agreement, dated March 27, 2012, between ARE-SD Region No. 32, LLC and Illumina	10-K	001-35406	10.18	2/13/2018
+10.19	Deferred Compensation Plan, effective December 1, 2007	14D-9	005-60457	99(e)(6)	2/7/2012
10.20	Lease between BMR-Lincoln Centre LP and Illumina, dated December 30, 2014	10-K	001-35406	10.26	2/18/2015
10.21	Pooled Patents Agreement between Illumina and Sequenom, Inc., dated December 2, 2014 (with certain confidential portions omitted)	10-K	001-35406	10.27	2/18/2015
10.22	First Amendment to Pooled Patents Agreement between Illumina and Sequenom, Inc., effective as of April 21, 2016	10-K	001-35406	10.22	2/13/2018

10.23	Second Amendment to Pooled Patents Agreement between Illumina and Sequenom, Inc., effective as of April 17, 2017	10-K	001-35406	10.23	2/13/2018	
10.24	Third Amendment to Pooled Patents Agreement between Illumina and Sequenom, Inc., effective as of August 28, 2017 (with certain confidential portions omitted)	10-K	001-35406	10.24	2/13/2018	
10.25	Fourth Amendment to Pooled Patents Agreement between Illumina and Sequenom, Inc., effective as of March 15, 2018					X
10.26	Fifth Amendment to Pooled Patents Agreement between Illumina and Sequenom, Inc., effective as of April 12, 2019 (with certain confidential portions omitted)					X
10.27	Agreement for Lease between Granta Park Park Jco 1 Limited and Illumina, dated June 25, 2015	10-Q	001-35406	10.1	7/31/2015	
10.28	Third Amendment to Lease between ARE-SD Region No. 32, LLC and Illumina, dated September 2, 2015	10-K	001-35406	10.29	3/2/2016	
10.29	First Amendment to Lease between BMR-Lincoln Center LP and Illumina, dated February 23, 2016	10-K	001-35406	10.30	3/2/2016	
10.30	Fourth Amendment to Lease between ARE-SD Region No. 32, LLC and Illumina, dated April 14, 2016	10-K	001-35406	10.28	2/14/2017	
10.31	Second Amendment to Lease between BMR-Lincoln Center LP and Illumina dated August 15, 2016	10-K	001-35406	10.29	2/14/2017	
10.32	Deed of Variation to the Agreement for Lease between Granta Park Jco 1 Limited and Illumina dated October 24, 2016	10-K	001-35406	10.30	2/14/2017	
10.33	Third Amendment to Lease between BMR-Lincoln Center LP and Illumina dated January 18, 2018	10-Q	001-35406	10.10	4/25/2018	
+10.34	Separation Agreement between Garret Hampton and Ilumina dated as of November 25, 2019					X
21.1	Subsidiaries of Illumina					X
23.1	Consent of Independent Registered Public Accounting Firm					X
24.1	Power of Attorney (included on the signature page)					X
31.1	Certification of Francis A. deSouza pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
31.2	Certification of Sam A. Samad pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					X
32.1	Certification of Francis A. deSouza pursuant to 18 U.S.C. Section 1350, as adopted					X

pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

32.2	Certification of Sam A. Samad pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	X
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document	X
101.SCH	XBRL Taxonomy Extension Schema	X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase	X
101.LAB	XBRL Taxonomy Extension Label Linkbase	X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase	X
101.DEF	XBRL Taxonomy Extension Definition Linkbase	X
104	Cover Page Interactive Data File - formatted in Inline XBRL and included as Exhibit 101	X

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\+ Management contract or corporate plan or arrangement

Supplemental Information

No Annual Report to stockholders or proxy materials has been furnished to stockholders as of the date of this report. The Annual Report to stockholders and proxy material will be furnished to our stockholders after the filing of this Annual Report on Form 10-K and we will furnish such material to the SEC at that time.

FORM 10-K CROSS-REFERENCE INDEX

SIGNATURES

Pursuant to the requirements of the 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, on February 10, 2020.

ILLUMINA, INC.

By /s/ FRANCIS A. DESOUZA

Francis A. deSouza

President and Chief Executive Officer

February 10, 2020

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENT, that each person whose signature appears below constitutes and appoints Francis A. deSouza and Sam A. Samad, and each or any one of them, his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other 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 requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their, his, or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

/s/ FRANCIS A. DESOUZA Francis A. deSouza	President, Chief Executive Officer, and Director (Principal Executive Officer)	February 10, 2020
/s/ SAM A. SAMAD Sam A. Samad	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 10, 2020
/s/ KAREN MCGINNIS Karen McGinnis	Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 10, 2020
/s/ JAY T. FLATLEY Jay T. Flatley	Chairman of the Board of Directors	February 10, 2020
/s/ FRANCES ARNOLD Frances Arnold	Director	February 10, 2020
/s/ CAROLINE D. DORSA Caroline D. Dorsa	Director	February 10, 2020
/s/ ROBERT S. EPSTEIN Robert S. Epstein	Director	February 10, 2020
/s/ SCOTT GOTTLIEB Scott Gottlieb, M.D.	Director	February 10, 2020
/s/ GARY S. GUTHART Gary S. Guthart, Ph.D.	Director	February 10, 2020
/s/ PHILIP W. SCHILLER Philip W. Schiller	Director	February 10, 2020
/s/ SUSAN E. SIEGEL Susan E. Siegel	Director	February 10, 2020
/s/ JOHN W. THOMPSON John W. Thompson	Director	February 10, 2020

Fourth Amendment to Pooled Patents Agreement

This Fourth Amendment to the Pooled Patents Agreement (the "**Fourth Amendment**") is effective as of the date of last signature found below ("**Fourth Amendment Effective Date**") between Illumina, Inc., a Delaware corporation having a place of business at 5200 Illumina Way, San Diego, CA 92122 ("**Illumina**") and Sequenom, Inc., a Delaware corporation, having a place of business at 3595 John Hopkins Court, San Diego CA 92121 ("**Sequenom**"). Sequenom and Illumina may be referred to herein as "**Party**" or "**Parties**."

WHEREAS, the Parties entered into the Pooled Patents Agreement, dated December 2, 2014, as amended via a First Amendment dated April 21, 2016, via a Second Amendment dated April 17, 2017, and via a Third Amendment dated August 28, 2017 ("**Agreement**");

WHEREAS, the Parties desire to amend certain license grants under the Agreement; and

WHEREAS, for good and valuable consideration, the Parties agree to amend the Agreement as follows:

1. Section 2.1 is deleted in its entirety and replaced with the following:

2.1 Rights Under Pooled Patents Generally. This Section 2.1 is not intended to, and does not, convey any license rights under any Pooled Patent. In the event of any conflict between the language in this Section 2.1 and the provisions of any Ancillary Agreement granting a license under any Pooled Patent, or the licenses granted pursuant to Sections 2.2 (License to Sequenom Under Illumina Owned Patents) and 2.3 (Licenses to Illumina Under Sequenom Owned Patents and Isis Patents) of this Agreement, the applicable provisions in the Ancillary Agreement, Section 2.2, or Section 2.3 shall control.

(a) Illumina Rights. Pursuant and subject to this Agreement (including the license grants in Sections 2.2 and 2.3), and the Ancillary Agreements, and the rights retained by Sequenom (and by Isis and its Affiliates as described in Schedule 7.1(b)) under the Sequenom Patents, Illumina will have:

(i) the exclusive (even as to the Sequenom Parties), worldwide, sublicensable right under the Pooled Patents to Exploit NIPT IVD Products in the NIPT IVD Field,

(ii) the exclusive, worldwide, sublicensable right under the Pooled Patents (excluding the Isis Patents) to Exploit NIPT LDT Tests in the NIPT LDT Field, subject to the non-exclusive rights granted to, or reserved by, the Sequenom Parties, and

(iii) the nonexclusive, worldwide, sublicensable right under the Isis Patents to Exploit NIPT LDT Tests in the NIPT LDT Field.

Notwithstanding the foregoing, for the avoidance of doubt:

(1) each of Sections 2.1(a)(i), 2.1(a)(ii) and 2.1(a)(iii) is subject to any and all applicable terms in the CUHK Licenses, including without limitation any territory restrictions and rights reserved by CUHK thereunder,

(2) each of Sections 2.1(a)(i), 2.1(a)(ii) and 2.1(a)(iii) is subject to Section 2.8 (Conditions for Illumina Grant of Licenses Under Pooled Patents), and

(3) Section 2.1(a)(ii) is subject to rights granted under Existing Sequenom Licenses.

(b) Sequenom Rights. Pursuant and subject to this Agreement (including the license grants in Sections 2.2 and 2.3, the exclusive rights of Illumina in Section 2.8(f)), the Ancillary Agreements, and the rights retained by the Sequenom Parties under the Isis Patents:

(i) neither Sequenom nor any of its Affiliates will have any rights under the Pooled Patents (including under the Isis Patents) to Exploit NIPT IVD Products anywhere in the world,

(ii) the Sequenom Parties will have a non-exclusive, worldwide, non-sublicensable right under the Pooled Patents to Exploit NIPT LDT Tests in the NIPT LDT Field, except that, with respect to the Isis Patents, the Sequenom Parties will have the right to grant sublicenses to Persons that are not Sequencing Platform Manufacturers and thereby authorize, only under the Isis Patents, each such sublicensee to Exploit NIPT LDT Tests in the NIPT LDT Field in that sublicensee's, or as applicable its Affiliates', clinical laboratory,

(iii) the Sequenom Parties will retain the rights under the Isis Patents, subject to the rights granted to Illumina under the Isis Patents (exclusive to Exploit NIPT IVD Products in the NIPT IVD Field, and nonexclusive to Exploit NIPT LDT Tests in the NIPT LDT Field).

Notwithstanding the foregoing, for the avoidance of doubt, (A) Sequenom acknowledges and agrees that the Sequenom Parties do not have any rights under Pooled Patents with respect to Exploiting NIPT IVD Products, and (B) each of Sections 2.1(b)(ii) and 2.1(b)(iii) is subject to:

(1) rights granted under Existing Sequenom Licenses, and

(2) any and all applicable terms in the University Licenses, including without limitation any field limitations, any territory restrictions and rights reserved by the applicable University Licensor thereunder or Isis.

2. Section 2.3 of the Agreement is deleted in its entirety and replaced with the following:

2.3 License to Illumina Under Sequenom Owned Patents and Isis Patents.

(a) On the terms and conditions of this Agreement, Sequenom, on behalf of itself and its Affiliates, hereby grants to Illumina an exclusive, irrevocable and perpetual (subject to Section 2.3(b)), non-transferable and non-assignable (except as permitted under Section 9.1), worldwide license, with the exclusive right to grant sublicenses (including to its Affiliates), under the Sequenom Owned Patents and Isis Patents, to Exploit NIPT LDT Tests in the NIPT LDT Field and to Exploit NIPT IVD Products in the NIPT IVD Field, provided that the license is Royalty-bearing with respect to NIPT IVD Products and the license is Test Fee-bearing with respect to NIPT LDT Tests. The foregoing license grant in the NIPT LDT Field is subject to (i) any and all Existing Sequenom Licenses, and (ii) the reservation of the non-exclusive right, on behalf of Sequenom and its Affiliates, to Exploit NIPT LDT Tests in the NIPT LDT Field and to grant sublicenses under the Isis Patents to Persons that are not Sequencing Platform

Manufacturers for each such sublicensee to Exploit NIPT LDT Tests in the NIPT LDT Field in its, or as applicable its Affiliates', clinical laboratories.

(b) Any sublicense of the rights set forth in Section 2.3(a) granted to any Affiliate of Illumina shall automatically terminate with respect to such Person when it ceases to be an Affiliate of Illumina. The Parties agree that any license granted to any Affiliate of Illumina under Section 2.3(a) of the Agreement prior to the Fourth Amendment Effective Date is hereby terminated. On and after the Fourth Amendment Effective Date, any rights granted to an Affiliate of Illumina under Section 2.3(a) shall be granted by way of sublicense.

(c) Sequenom agrees on behalf of itself, its Affiliates, and their respective successors and assigns that, to the extent any such Sequenom Affiliate (a "**Granting Sequenom Affiliate**") is the owner (including joint owner) or in-licensee of any Pooled Patents for which Illumina has been granted rights hereunder (including under Ancillary Agreements), or has granted rights hereunder (including under Ancillary Agreements) to Illumina, such rights granted to Illumina (i) shall not terminate following the date, if any, that such Granting Sequenom Affiliate ceases to be an Affiliate of Sequenom and that such rights shall continue to be perpetual and irrevocable on and after such date, subject to Section 2.3(b) and (ii) to the extent Illumina received rights only from a Granting Sequenom Affiliate under Pooled Patents and not from Sequenom or another Affiliate that is not a Granting Sequenom Affiliate, such rights shall become a direct license from Sequenom under Sequenom Patents.

3. Section 2.8(a) of the Agreement is deleted in its entirety and replaced with the following:

(a) Test Fee; Conveyance of Customer License to Illumina Customers. Subject to the terms and conditions of this Agreement (including Section 2.8(f) (Non-Illumina Platforms) and Section 2.9(a)(i) (Sequenom Granting Licenses Under Isis Patents), and rights expressly retained by Sequenom to grant sublicenses to Persons to Exploit NIPT LDT Tests in the NIPT LDT Field in such Person's, or as applicable its Affiliates', clinical laboratory under the Isis Patents), Illumina has the exclusive right to grant licenses to perform NIPT LDT Tests in the NIPT LDT Field to any Person under any and all the Pooled Patents, provided the license obligates the Person to pay a Test Fee on terms consistent with Section 3.2 of this Agreement (each a "**New Illumina Licensee**"). Subject to the immediately preceding sentence, including obligations regarding Test Fees, Illumina may grant licenses under Pooled Patents to Illumina Customers who purchase Illumina Products, which licenses authorize the Illumina Customer, with each unit of consumable Illumina Product purchased, to Exploit, including a subset of the rights constituting Exploitation, NIPT LDT Tests in the NIPT LDT Field using Illumina Products (each such license an "**Illumina Customer License**").

4. Section 5.1(b) of the Agreement is deleted in its entirety and replaced with the following:

(b) Right to Take Action. Subject to Section 5.1(f) (Secondary Enforcement Rights) and Section 5.1(d) (University Licensors) and any applicable University License, as between Sequenom and Illumina and their respective Affiliates, Illumina shall have the sole right (which it may exercise through its Affiliates at its sole discretion), at its sole expense, to enforce the Pooled Patents (including the right to sue for and collect damages relating to any acts occurring before, on, or after the Fourth Amendment Effective Date, subject to Section 5.1(c)) against Third Parties that Exploit NIPT LDT Tests in the NIPT LDT Field and against Third Parties that Exploit NIPT IVD Products in the NIPT IVD Field, except to the extent (i) such sole right is inconsistent with an applicable Ancillary Agreement or University License, (ii) that Sequenom and its Affiliates retains the enforcement rights under the Isis Patents in the NIPT LDT Field, or (iii) subject to Section 5.1(e) (Existing Litigation). Subject to the

foregoing, solely with respect to infringement of the Isis Patents in the NIPT LDT Field, Sequenom, and in all other cases, Illumina, will have the sole right to determine whether or not to take whatever legal or other action is required in response to activities described under Section 5.1(a), including such activities of which Sequenom becomes aware and provides notice under Section 5.1(a) ("**Protective Action**"). If the applicable Party determines in its sole discretion that such Protective Action is warranted, then such Party or its Affiliates shall, at such Party's expense, commence and prosecute and control such Protective Action. The other Party may be represented by counsel of its own selection at its own expense in such Protective Action to the extent it is a party of record in such Protective Action, provided that such counsel shall not in any way control such Protective Action.

Except as expressly modified herein, the Agreement shall remain in full force and effect in accordance with its terms. All capitalized terms not defined in this Fourth Amendment shall have the meaning ascribed to them in the Agreement.

IN WITNESS WHEREOF, the Parties have signed this Fourth Amendment as of the dates indicated below.

ILLUMINA		**SEQUENOM**	
By:	/s/ Jeff Eidel	By:	/s/ Michael Minahan
Name:	Jeff Eidel	Name:	Michael Minahan
Title:	VP, Corporate & Business Development	Title:	Sr VP
Date:	3/15/2018	Date:	3/15/2018

Fifth Amendment to Pooled Patents Agreement

This Fifth Amendment to the Pooled Patents Agreement (the "**Fifth Amendment**") is effective as of the date of last signature found below ("**Fifth Amendment Effective Date**") between Illumina, Inc., a Delaware corporation having a place of business at 5200 Illumina Way, San Diego, CA 92122 ("**Illumina**") and Sequenom, Inc., a Delaware corporation, having a place of business at 3595 John Hopkins Court, San Diego CA 92121 ("**Sequenom**"). Sequenom and Illumina may be referred to herein as "**Party**" or "**Parties**."

WHEREAS, the Parties entered into the Pooled Patents Agreement, dated December 2, 2014, as amended via the First Amendment dated April 21, 2016, Second Amendment dated April 17, 2017, Third Amendment dated August 28, 2017, and Fourth Amendment dated March 15, 2018 ("**Agreement**");

WHEREAS, the Parties have been discussing a lowering of Test Fees in accordance with Section 3.2(c)(iii), and have now reached agreement in accordance with Sections 3.2(c)(iii)(1) and (3);

WHEREAS, the Parties desire to amend the Agreement to permit lower Test Fees to be paid by certain companies, as identified herein;

WHEREAS, the Parties also desire to amend the Agreement to modify the schedule on which Licensed NIPT LDT Test volumes are assessed for purposes of determining Test Fees; and

WHEREAS, for good and valuable consideration, the Parties agree to amend the Agreement as follows:

1. The definition of "Authorized Lab" is deleted in its entirety and replaced with:
   "**Authorized Lab**" has the meaning set forth in Section 3.2(a)(ii).

2. Section 3.2(c)(i) is deleted in its entirety and replaced with:
   Except as expressly stated otherwise in this Agreement (including in Section 3.2(c)(ii) (Exceptions to Amount of Test Fee), Section 2.8(e) (Third Parties in Litigation with Illumina), Section 2.8(f) (Non-Illumina Platforms) and Section 2.9(c) (Settlement with Existing Sequenom Litigants)), each Illumina Party or Sequenom Party shall enter into written agreements with Persons it grants rights, licenses, or authorizations as an Authorized Labs such that the Authorized Lab is obligated to pay Test Fees on a quarterly basis, and Sequenom Parties and Illumina Parties shall be obligated to pay Test Fees on a quarterly basis. (A) Except as stated below with respect to Licensed NIPT LDT Test for which the Test Fee is equal to 10% of Net LDT Sales thereof (as a result of being the greater of 10% of Net LDT Sales or the amount on the table in Section 3 of Schedule 1), on a semiannual basis, the amount of Test Fee payable by each Authorized Lab for Licensed NIPT Tests shall be established to be no lower than the Test Fee amount on Schedule 1, Section 3 corresponding to the annualized volume of Licensed NIPT LDT Tests that Authorized Lab performed (a) in the first two quarters of a calendar year to determine the amount of Test Fees that shall be payable by an Authorized Lab for Licensed NIPT LDT Tests performed in the remainder of the calendar year, and (b) in the second two quarters of a

calendar year to determine the amount of Test Fees that shall be payable by an Authorized Lab for Licensed NIPT LDT Tests performed in the first two quarters of the following calendar year. Any new Authorized Lab receiving the right to perform Licensed NIPT LDT Tests shall pay Test Fees for Licensed NIPT LDT Tests that are no lower than the amount of Test Fee on Schedule 1, Section 3 that corresponds to the good faith estimate of the volume that Authorized Lab will achieve at the end of the first complete half-year period (either the first two quarters or second two quarters of a calendar year, as the case may be) until after the end of such first complete half-year period, at which point the Authorized Lab will begin paying Test Fees based on the actual volume reported during the first full half-year period (and each preceding half-year period thereafter). The quarterly Test Fees for an Authorized Lab shall be in amounts that result in at least the product of (1) the number of Licensed NIPT LDT Tests performed by that Authorized Lab in that quarter with (2) the Test Fee amount in effect for that Authorized Lab in that quarter, plus an amount equal to the product of the annual number of Licensed NIPT LDT Tests in (1) that are subject to the additional $20 fee as set forth on Schedule 1 multiplied by $20. (B) With respect to each Licensed NIPT LDT Test for which the Test Fee is equal to 10% of Net LDT Sales thereof (as a result of being the greater of 10% of Net LDT Sales or the amount on the table in Section 3 of Schedule 1), the quarterly Test Fees shall be 10% of Net LDT Sales thereof for that quarter. For the avoidance of doubt, notwithstanding the minimum amounts payable in accordance with the first sentence of this Section 3.2(c), the full amount of all Test Fees collected by Illumina and Sequenom from Authorized Labs shall be shared between the Parties as set forth in Section 3.2(d) (Sharing of Test Fee Amounts.)

Notwithstanding the foregoing schedule, the Parties acknowledge that Illumina has entered into agreements with Authorized Labs reflecting the annual Test Fee calculations pursuant to the terms of the Agreement prior to the Fifth Amendment. Illumina will not be required to amend those existing agreements or alter its obligations with respect to those Authorized Labs under those existing agreements, but Illumina will in good faith attempt to amend those agreements to match the updated Test Fee calculation schedule set forth above on a going-forward basis when Illumina otherwise amends or renews such agreements.

3. Schedule 1 is deleted in its entirety and replaced with the attached new Schedule 1. For clarity, Schedule 1A and 1B remain unchanged.

Except as expressly modified herein, the Agreement shall remain in full force and effect in accordance with its terms. All capitalized terms not defined in this Fifth Amendment shall have the meaning ascribed to them in the Agreement.

IN WITNESS WHEREOF, the Parties have signed this Fifth Amendment as of the dates indicated below.

ILLUMINA		**SEQUENOM**	
By:	/s/ Jeffrey S. Eidel	By:	/s/ Michael F Minahan
Name:	Jeffrey S. Eidel	Name:	Michael F. Minahan
Title:	Head of Corporate & Business Development	Title:	Sr. Vice President & General Manager
Date:	4/12/2019	Date:	4/12/2019

Schedule 1

[***]

*** Indicates confidential information omitted from the exhibit

SEPARATION AGREEMENT

AND GENERAL RELEASE OF ALL CLAIMS

This Separation Agreement and General Release of All Claims ("Agreement") is made by and between Illumina, Inc. ("Illumina" or "the Company") and Garret Hampton ("Executive") collectively ("the Parties"), with respect to the following facts:

A. Executive is employed by the Company as a Senior Vice President, Clinical Genomics.
B. Executive's employment will end effective January 10, 2020 ("Separation Date").
C. The Company wishes to assist Executive in his transition to other employment and has offered to provide Executive with a severance payment as described below.

THEREFORE, in consideration of the promises and mutual agreements hereinafter set forth, it is agreed by and between the undersigned as follows:

1. Severance.

1.1 The Company agrees to pay Executive a Severance Payment equivalent to twelve (12) months of his normal wages, in the gross amount of Five-Hundred, Sixty Thousand Dollars and Zero Cents ($560,000.00), less all appropriate federal and state tax withholdings, to which Executive is not otherwise entitled ("Severance Payment"). Executive acknowledges and agrees that this Severance Payment constitutes adequate legal consideration for the promises and representations made by him in this Agreement. Subject to the provisions below, the Severance Payment will be made in a lump sum payment within thirty (30) days after all of the following: (1) Executive has signed all exit paperwork; (2) the Effective Date of this Agreement, as defined in paragraph 7.4; (3) Executive has initialed each page, signed and returned this Agreement, by email scan or mail to Sue McGrath at smcgrath@illumina.com or by mail to 5200 Illumina Way, San Diego, CA 92122, Attention: Sue McGrath on or before the deadline stated in paragraph 9, and; (4) Executive has timely returned to Illumina all Company property in his possession, custody or control as defined in paragraph 10 of this Agreement.

1.2 The Company agrees to pay for the cost of continued coverage for Executive's existing medical benefits through the provisions of the Consolidated Omnibus Budget Reconciliation Act ("COBRA") for a period of twelve (12) consecutive months following the termination of his benefits on January 31, 2020 until January 31, 2021. These sums will be paid directly to Illumina's carrier provided that the Executive timely and properly completes all required elections directly with Illumina's carrier to continue coverage under COBRA. Thereafter, Executive may elect to continue such benefits at his own expense under the provisions of COBRA. For the avoidance of doubt, Illumina is not liable for and will not reimburse Executive for out-of-pocket medical expenses if Executive fails to timely and properly elect continuation of coverage through COBRA.

1.3 Executive will receive twelve (12) months of executive physical and services benefits from the Lifewellness Institute, Scripps Center for Executive Health or an equivalent vendor contracted by Illumina.

1.4 Career Counseling. The Company agrees to provide twelve (12) consecutive months of career counseling services through Lee Hecht Harrison. Such career counseling benefits must be started within (6) months of the Separation Date, after such time the right to the services shall expire.

1.5 2019 Variable Compensation Program (VCP). As stated in Illumina's VCP Administrative document, if an employee has completed the performance period and is terminated involuntarily not for cause prior to the VCP payment date, they will be eligible for payment. The performance period for the 2019 VCP is December 31, 2018 to December 29, 2019.

1.6 Receipt of Wages & Expenses. With the exception of the severance benefits described in paragraph 1.1 - 1.4, above, and the 2019 Variable Compensation Program payment, if paid pursuant to the VCP Plan, Executive acknowledges that he has received all compensation, wages, equity, and/or expense reimbursements owed to him through the Effective Date of this Agreement, and that he is not entitled to any future payments of any type.

2. General Release.

2.1 Executive unconditionally, irrevocably and absolutely releases and discharges the Company, and any parent and subsidiary corporations, divisions and other affiliated entities of the Company, past and present, as well as the Company's Executives, officers, directors, agents, attorneys, successors and assigns of the Company (collectively, "Released Parties"), from all claims related in any way to the transactions or occurrences between them to date to the fullest extent permitted by law including, but not limited to, Executive's employment with the Company, the termination of Executive's employment, and all other losses, liabilities, claims, demands and causes of action, known or unknown, suspected or unsuspected, arising directly or indirectly out of or in any way connected with Executive's employment with the Company. This release is intended to have the broadest possible application and includes, but is not limited to, any tort, contract, common law, constitutional or other statutory claims, any claim for unpaid wages, commissions, bonuses or other employment benefits, as well as alleged violations of the California Labor Code or the federal Fair Labor Standards Act, Title VII of the Civil Rights Act of 1964 and the California Fair Employment and Housing Act, the Americans with Disabilities Act, the Age Discrimination in Employment Act of 1967, as amended, and all claims for attorneys' fees, costs and expenses. However, this release shall not apply to claims for workers' compensation benefits, unemployment insurance benefits, or any other claims that cannot lawfully be waived.

2.2 Executive acknowledges that he may discover facts or law different from, or in addition to, the facts or law that he knows or believes to be true with respect to the claims released in this Agreement and agrees, nonetheless, that this Agreement and the release contained in it shall be and remain effective in all respects notwithstanding such different or additional facts or the discovery of them.

2.3 Executive declares and represents that he intends this Agreement to be final and complete and not subject to any claim of mistake. Executive executes this release with the full knowledge that this release covers all possible claims against the Released Parties, to the fullest extent permitted by law.

2.4 Executive expressly waives his right to recover any type of personal relief from the Company, including monetary damages or reinstatement, in any administrative action or proceeding, whether state or federal, and whether brought by Executive or on Executive's behalf by an administrative agency, related in any way to the matters released herein. Nothing in this paragraph is intended to prevent or discourage the Executive from communicating with any state or federal governmental agency.

2.5 Executive declares and represents that as of the Effective Date of this Agreement he is not aware of any violations of any applicable rules, regulations and/or laws by Company or any employee of Company; or that if he is aware of or is concerned about any such violations, he has reported those to Company.

3. California Civil Code Section 1542 Waiver. Executive expressly acknowledges and agrees that all rights under Section 1542 of the California Civil Code are expressly waived. That section provides:

> A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS THAT THE CREDITOR OR RELEASING PARTY DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE AND THAT, IF KNOWN BY HIM OR HER, WOULD HAVE

MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR OR RELEASED PARTY.

Executive understands that he is a “creditor” within the meaning of Section 1542.

4. Representation Concerning Filing of Legal Actions. Executive represents that, as of the date of this Agreement, he has not filed any lawsuits, complaints, petitions, claims or other accusatory pleadings against the Company or any of the other Released Parties in any court. Executive further agrees that, to the fullest extent permitted by law, he will not prosecute in any court, whether state or federal, any claim or demand of any type related to the matters released above, it being the intention of the parties that with the execution of this release, the Released Parties will be absolutely, unconditionally and forever discharged of and from all obligations to or on behalf of Executive related in any way to the matters discharged herein Nothing in this agreement shall prevent the Executive from complying with a lawfully issued subpoena or from communicating with a state or federal governmental agency.

5. No Admissions. By entering into this Agreement, the Released Parties make no admission that they have engaged, or are now engaging, in any unlawful conduct. The parties understand and acknowledge that this Agreement is not an admission of liability and shall not be used or construed as such in any legal or administrative proceeding.

6. Agreement to Cooperate. Executive agrees that he will, in good faith and with due diligence, assist in, facilitate and cooperate with the Company and provide information as to matters which he was personally involved, or has information on, while he was an Executive of the Company and which become the subject of an action, investigation, proceeding, litigation or otherwise. Executive shall make himself available, upon reasonable notice, to be interviewed, give sworn testimony and statements, declarations, trial testimony and other such disclosures. Nothing herein is intended or should be construed as requiring anything other than Executive’s cooperation in providing truthful and accurate information.

7. Older Workers’ Benefit Protection Act. This Agreement is intended to satisfy the requirements of the Older Workers’ Benefit Protection Act, 29 U.S.C. sec. 626(f). The following general provisions, along with the other provisions of this Agreement, are agreed to for this purpose:

7.1 Executive acknowledges and agrees that he has read and understands the terms of this Agreement.

7.2 Executive is advised that he should consult with an attorney before signing this Agreement, and Executive acknowledges that he has obtained and considered any legal advice he deems necessary, such that he is entering into this Agreement freely, knowingly and voluntarily.

7.3 Executive acknowledges that he has been given at least twenty-one days in which to consider whether or not to enter into this Agreement. Executive understands that, at his option, Executive may elect not to use the full 21-day period.

7.4 This Agreement shall not become effective or enforceable until the eighth day after Executive signs this Agreement. In other words, Executive may revoke his acceptance of this Agreement within seven days after the date he signs it. Executive's revocation must be in writing and received by Sue McGrath of Illumina by 5:00 p.m. on the seventh day in order to be effective. If Executive does not revoke acceptance within the seven day period, Executive's acceptance of this Agreement shall become binding and enforceable on the eighth day (“Effective Date”).

7.5 This Agreement does not waive or release any rights or claims that Executive may have under the Age Discrimination in Employment Act that arise after the execution of this Agreement.

7.6 Executive may not sign this Agreement until after the Separation Date. If he signs this Agreement prior to the Separation Date, this Agreement shall be null and void.

8. Severability. In the event any provision of this Agreement shall be found unenforceable by a court of competent jurisdiction, the provision shall be deemed modified to the extent necessary to allow enforceability of the provision as so limited, it being intended that the Released Parties shall receive the benefits contemplated herein to the fullest extent permitted by law. If a deemed modification is not satisfactory in the judgment of such court, the unenforceable provision shall be deemed deleted, and the validity and enforceability of the remaining provisions shall not be affected thereby.

9. Deadline For Signature. This Agreement constitutes an offer to Executive, which must be accepted by Executive and returned to the Company by no later than 21 days after the Separation Date, after which date the offer shall lapse and be of no further force or effect.

10. Return of Company Property. Executive understands and agrees that as a condition of receiving the Severance Payment, all Company property still in Executive's possession, if any, must be immediately returned to the Company. By signing this Agreement, Executive represents and warrants that Executive has or will have returned such Company Property no later than Executive's Separation Date, including any Company issued or provided credit cards, computers, vehicles, tangible property and equipment, keys, entry cards, identification badges, telephones, PDAs, and all documents, paper or electronic files, folders, correspondence, memoranda, notes, notebooks, drawings, books, records, plans, forecasts, reports, proposals, agreements, financial information, computer-recorded information, as well as all copies thereof, electronic or otherwise. Executive agrees that if, after signing this Agreement, he discovers Company Property in his possession that he will notify Illumina's General Counsel immediately of the discovery and within 5 business days, return any such property as directed by the General Counsel.

11. Nondisclosure and Non-Use of Company Confidential Information. Executive acknowledges and agrees that, by reason of his high-level, sensitive position with the Company, he has been given access to the Company's most confidential and proprietary documents, materials and information, including those regarding the Company's products, strategic plans and litigation strategies, research, business affairs, and personnel matters, which he acknowledges and agrees are of a highly sensitive and confidential nature and considered trade secrets and/or proprietary to the Company. Such information, documents and materials may include, without limitation, trade secrets, inventions, research, plans, proposals, acquisitions or divestitures, marketing and sales programs, litigation strategies, financial projections, cost summaries, pricing formulas and all concepts or ideas, materials or information related to the products, research, business or sales of the Company or the Company's customers or business partners, as well as the Company's personnel matters, which has not previously been released to the public at large by an authorized representative of the Company. Executive represents that he has held all such information confidential and will continue to do so, and that he will not use such confidential or proprietary information and/or documents for any purpose whatsoever. Executive understands that this obligation of confidentiality continues even after the Separation Date. Executive also reaffirms his agreement to all of his obligations under the Proprietary Information and Invention Agreement signed by him at or about his date of hire. The Parties expressly incorporate said agreement into this Settlement Agreement.

Executive acknowledges and agrees that disclosure and/or use of any such confidential information would cause irreparable harm to the Company, which could not be adequately or reasonably compensated in damages in an action at law. Accordingly, in the event of such disclosure or use (whether actual or threatened), Executive agrees that the Company, in addition to exercising any other rights and remedies available to it under this Agreement or otherwise, is entitled to obtain injunctive relief and other equitable relief from a court of competent jurisdiction restraining Executive from such disclosure and use.

12. Applicable Law. The validity, interpretation and performance of this Agreement shall be construed and interpreted according to the laws of the United States of America and the State of California.

13. Binding on Successors. The parties agree that this Agreement shall be binding on, and inure to the benefit of his or its successors, heirs and/or assigns.

14. Full Defense. This Agreement may be pled as a full and complete defense to, and may be used as a basis for an injunction against, any action, suit or other proceeding that may be prosecuted, instituted or attempted by Executive in breach hereof. Executive agrees that in the event an action or proceeding is instituted by the Released Parties in order to enforce the terms or provisions of this Agreement, the Released Parties shall be entitled to an award of reasonable costs and attorneys' fees incurred in connection with enforcing this Agreement. The terms of this paragraph shall not apply to an action by Executive to challenge the enforceability of Executive's waiver of rights under the Age Discrimination in Employment Act.

15. Good Faith. The parties agree to do all things necessary and to execute all further documents necessary and appropriate to carry out and effectuate the terms and purposes of this Agreement.

16. Entire Agreement; Integration. This Agreement contains the entire agreement between the Company and the Executive on the subjects addressed in this Agreement and replaces any other prior agreements or representations, whether oral or written, between them; provided, however, that the Proprietary Information and Invention Agreement executed by Executive remains in full force and effect and is not superseded by this Agreement.

17. Modification. This Agreement may be amended only by a written instrument executed by all parties hereto.

18. Counterparts. This Agreement may be executed in counterparts and shall be binding on all parties when each has signed either an original or copy of this Agreement.

19. Confidentiality. Except where disclosure is required by law, Executive agrees that the terms and conditions of this Agreement shall remain confidential as between the parties and he shall not disclose them to any other person, including but not limited, to any current or former Illumina employee. Executive also agrees that he will not respond to, participate in, or contribute to any public discussion or other publicity concerning, or in any way relating to, execution of this Agreement or the events (including any negotiations) leading to its execution. Without limiting the foregoing, the Executive may disclose the terms and conditions of this Agreement to his wife, attorneys and/or financial advisors provided he informs them of this confidentiality provision and they agree to abide by it. A violation of this section 19 shall be a material breach of this Agreement.

20. Non-Disparagement. Neither Executive, nor anyone subject to his direction or control, will make any negative, derogatory or disparaging statements, publications or comments, regarding his employment with the Company or the business reputation or business practices of the Company and/or the Released Parties to any person or entity. This section will in no way prevent Executive from testifying truthfully pursuant to an enforceable subpoena. Company agrees that none of its executive officers, nor anyone subject to their direction or control will make any negative, derogatory or disparaging statements, publications or comments regarding Executives employment with Company. This restriction will in no way prevent any executive officer from testifying truthfully pursuant to an enforceable subpoena. **Further, nothing in this Agreement is intended to suppress or limit Employee's right to testify in any administrative, legislative or judicial forum about alleged criminal conduct or sexual harassment, or to prevent the disclosure of factual information related to claims filed in a civil or administrative action regarding sexual assault, sexual harassment or other forms of sex-based**

workplace harassment, discrimination or retaliation, to the extent such communications are expressly protected under California law.

21. Section 409(A) of the Internal Revenue Code. Notwithstanding anything herein to the contrary, if Executive is a "Specified Employee," for purposes of Section 409A of the Internal Revenue Code ("Section 409A"), on the date on which he incurs a Separation from Service, any payment or benefit provided in this Agreement that provides for the "deferral of compensation" within the meaning of Section 409A shall not be paid or provided or commence to be paid or provided on any date prior to the first business day after the date that is six months following Executive's "Separation from Service" (the "409A Suspension Period"); provided, however, that a payment or benefit delayed pursuant to the preceding clause shall commence earlier in the event of Executive's death prior to the end of the six-month period. Within 14 calendar days after the end of the 409A Suspension Period, Executive shall be paid a lump sum payment in cash equal to any payments delayed because of the preceding sentence. Thereafter, Executive shall receive any remaining benefits as if there had not been an earlier delay. For purposes of this Agreement, "Separation from Service" shall have the meaning set forth in Section 409A(a)(2)(i)(A) of the Internal Revenue Code and shall be determined in accordance with the default rules under Section 409A. "Specified Employee" shall have the meaning set forth in Section 409A(a)(2)(B)(1) of the Internal Revenue Code, as determined in accordance with the uniform methodology and procedures adopted by the Company and then in effect.

THE PARTIES TO THIS AGREEMENT HAVE READ THE FOREGOING AGREEMENT AND FULLY UNDERSTAND EACH AND EVERY PROVISION CONTAINED HEREIN. WHEREFORE, THE PARTIES HAVE EXECUTED THIS AGREEMENT ON THE DATES SHOWN BELOW.

Dated: 11/25/2019 By: /s/ Garret Hampton

Garret Hampton

Dated: 11/25/2019 By: /s/ Aimee Hoyt

Illumina, Inc.
Aimee Hoyt, SVP, Chief People Officer

SUBSIDIARIES OF THE COMPANY

Name of Subsidiary	Jurisdiction	Doing Business As
Advanced Liquid Logic Inc.	Delaware	Advanced Liquid Logic Inc.
Edico Genome Corp.	Delaware	Edico Genome Corp.
BlueGnome, Ltd.	United Kingdom	BlueGnome, Ltd.
Epicentre Technologies Corporation	Wisconsin	Epicentre Biotechnologies
Conexio Genomics Pty Ltd.	Australia	Conexio Genomics Pty Ltd.
FC Ops Corp.	Delaware	FC Ops Corp.
Illumina Australia Pty. Ltd.	Australia	Illumina Australia Pty. Ltd.
Illumina Brasil Produtos de Biotecnologia Ltda.	Brazil	Illumina Brazil
Illumina Cambridge, Ltd.	United Kingdom	Illumina Cambridge, Ltd.
Illumina Canada, Inc.	Canada	Illumina Canada, Inc.
Illumina (China) Scientific Co Ltd	China	Illumina China (Scientific) Co Ltd
Illumina US Manufacturing Operations, Inc.	Delaware	Illumina US Manufacturing Operations, Inc.
Illumina France Holding Sarl	France	Illumina France Holding Sarl
Illumina France Sarl	France	Illumina France Sarl
Illumina Finland Oy	Finland	Illumina Finland Oy
Illumina GmbH	Germany	Illumina GmbH
Illumina Hong Kong Limited	Hong Kong	Illumina Hong Kong Limited
Illumina Iceland ehf	Iceland	Illumina Iceland ehf
Illumina India Biotechnology Private Limited	India	Illumina India Biotechnology Private Limited
Illumina Ireland Commercial Limited	Ireland	Illumina Ireland Commercial Limited
Illumina Korea Ltd.	Republic of Korea	Illumina Korea Ltd.
Illumina Italy S.r.l.	Italy	Illumina Italy S.r.l.
Illumina K.K. Japan	Japan	Illumina K.K. Japan
Illumina Netherlands B.V.	Netherlands	Illumina Netherlands B.V.
Illumina Norway AS	Norway	Illumina Norway AS
Illumina New Zealand Limited	New Zealand	Illumina New Zealand Limited
Illumina Rus	Russia	Illumina Rus
Illumina Singapore Pte. Ltd.	Singapore	Illumina Singapore Pte. Ltd
Illumina Shanghai (Trading) Co., Ltd.	China	Illumina Shanghai (Trading) Co., Ltd.
Illumina Shanghai (Trading) Co Ltd Beijing Branch	China	Illumina Shanghai (Trading) Co Ltd Beijing Branch
Illumina Switzerland GmbH	Switzerland	Illumina Switzerland GmbH
Illumina Denmark ApS	Denmark	Illumina Denmark ApS
Illumina Productos de Espana, S.L.U.	Spain	Illumina Productos de Espana, S.L.U.
Illumina AB	Sweden	Illumina AB
Illumina Belgium BVBA	Belgium	Illumina Belgium BVBA
thromboDx BV	Netherlands	thromboDx BV
Verinata Health, Inc.	Delaware	Verinata Health, Inc.

*All listed subsidiaries are wholly-owned, direct or indirect, subsidiaries of Illumina, Inc.

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statements (Form S-3 Nos. 333-111496, 333-125100, 333-134012, 333-144953, 333-145408 and 333-168395) of Illumina, Inc.,
(2) Registration Statement (Form S-4 No. 333-139111) of Illumina, Inc., and
(3) Registration Statements (Form S-8 Nos. 333-42866, 333-69058, 333-88808, 333-104190, 333-114633, 333-124074, 333-125133, 333-129611, 333-134399, 333-140416, 333-147389, 333-151265, 333-159662, 333-168393, 333-188037, 333-190322 and 333-206215) of Illumina, Inc.;

of our reports dated February 10, 2020, with respect to the consolidated financial statements of Illumina, Inc. and the effectiveness of internal control over financial reporting of Illumina, Inc. included in this Annual Report (Form 10-K) of Illumina, Inc. for the year ended December 29, 2019.

/s/ Ernst & Young LLP

San Diego, California
February 10, 2020

Exhibit 31.1

CERTIFICATION OF FRANCIS A. DESOUZA PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Francis A. deSouza, certify that:

1 I have reviewed this Annual Report on Form 10-K of Illumina, Inc.;

2 Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3 Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4 The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5 The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: February 10, 2020

By: /s/ FRANCIS A. DESOUZA

Francis A. deSouza

President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF SAM A. SAMAD PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Sam A. Samad, certify that:

1 I have reviewed this Annual Report on Form 10-K of Illumina, Inc.;

2 Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3 Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4 The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5 The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: February 10, 2020

By: /s/ SAM A. SAMAD

Sam A. Samad

Senior Vice President and Chief Financial Officer

Exhibit 32.1

CERTIFICATION OF FRANCIS A. DESOUZA PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Illumina, Inc. (the "Company") on Form 10-K for the year ended December 29, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Francis A. deSouza, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: February 10, 2020

By: /s/ FRANCIS A. DESOUZA

Francis A. deSouza

President and Chief Executive Officer

This certification accompanying the Report is not deemed filed with the Securities and Exchange Commission for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities such Section, and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before, on or after the date of the Report), irrespective of any general incorporation language contained in such filing.

Exhibit 32.2

CERTIFICATION OF SAM A. SAMAD PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Illumina, Inc. (the "Company") on Form 10-K for the year ended December 29, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Sam A. Samad, Senior Vice President and Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: February 10, 2020

By: /s/ SAM A. SAMAD

Sam A. Samad

Senior Vice President and Chief Financial Officer

This certification accompanying the Report is not deemed filed with the Securities and Exchange Commission for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities such Section, and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before, on or after the date of the Report), irrespective of any general incorporation language contained in such filing.