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

Form 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2024

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 001-34899

Pacific Biosciences of California, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**16-1590339**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
1305 O'Brien Drive Menlo Park, CA 94025	**94025**
(Address of principal executive offices)	**(Zip Code)**

(Registrant's telephone number, including area code)
(650) 521-8000

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	**PACB**	**The NASDAQ Stock Market LLC**

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

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

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 (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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

Aggregate market value of registrant's common stock held by non-affiliates of the registrant on June 30, 2024 (the last business day of the registrant's most recently completed second fiscal quarter), based upon the closing price of common stock on such date as reported by NASDAQ Global Select Market, was approximately $371.4 million. Shares of voting stock held by each officer and director have been excluded in that such persons may be deemed to be affiliates. This assumption regarding affiliate status is not necessarily a conclusive determination for other purposes.

Number of shares outstanding of the registrant's common stock as of February 28, 2025: 297,852,228

DOCUMENTS INCORPORATED BY REFERENCE:

Portions of the registrant's definitive Proxy Statement relating to its 2025 Annual Meeting of Stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K where indicated. Such Proxy Statement will be filed with the U.S. Securities and Exchange Commission within 120 days after the end of the fiscal year to which this report relates.

Pacific Biosciences of California, Inc.

Annual Report on Form 10-K

For the Fiscal Year Ended December 31, 2024

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K, including the sections titled “Business,” “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” contain or may contain forward-looking statements that are based on the beliefs and assumptions of the management of Pacific Biosciences of California, Inc. (the “Company,” “we,” “us,” or “our”) and on information currently available to our management. The statements contained in this Annual Report on Form 10-K that are not purely historical are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and include, but are not limited to:

- the availability, uses, accuracy, sensitivity, advantages, compatibility, pricing, specifications, quality, or performance of, or benefits or expected benefits of using, our products or technologies, including the Revio®, Onso™ and Vega™ systems;
- our current and future products;
- improvements to our existing products;
- our strategic and commercial plans, including our expectations regarding our clinical strategy and Revio, Onso and Vega systems;
- our market opportunity, including market size and expected market growth;
- our expectations regarding the conversion of backlog to revenue and the pricing and gross margin for products;
- our manufacturing plans including developing and scaling of manufacturing and delivery of our products;
- any reductions or potential reductions in government funding, including for the National Institutes of Health (“NIH"), or targeted cancellations by the U.S. federal government of certain grants or contracts, could negatively impact our customers and reduce demand for our products and services;
- our research and development plans;
- the anticipated impact of catastrophic events, including health epidemics or pandemics and military or other armed conflicts, on our business, business plans and results of operations;
- uncertainty regarding or potential changes in diplomatic and trade relationships as a result of the recent change in the U.S. government administration;
- the impact of tariffs recently imposed by the U.S. government and its trading partners in response, other possible tariffs or trade protection measures, import or export licensing requirements, new or different customs duties, trade embargoes and sanctions and other trade barriers;
- our product development plans, roadmaps, and objectives, including, among other things, statements relating to future uses, quality, or performance of, or benefits of using, products or technologies, updates, or improvements of our products;
- our intentions regarding seeking regulatory approval for our products;
- our competitive landscape, including competition in the short- and long-read sequencing technologies markets;
- our expectations regarding collaborations and partnerships;
- our expectations regarding unrecognized income tax benefits;
- our expectations regarding market risk, including interest rate changes and general macroeconomic conditions;
- the sufficiency of cash, cash equivalents, and investments to fund projected operating requirements;
- the effects of recent accounting pronouncements on our financial statements; and
- other future events.

Forward-looking statements can be identified by words such as: “anticipates,” “believes,” “could,” “estimates,” “expects,” “intends,” “may,” “plans,” “potential,” “predicts,” “projects,” “seeks,” “should,” “target,” “will,” “would,” or similar expressions and the negatives of those terms. Forward-looking statements involve known and unknown risks, uncertainties, and other factors that may cause our actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by the forward-looking statements.

Factors that could cause or contribute to such differences include, but are not limited to, those discussed under the heading “Risk Factors” in this report and in other documents we file with the Securities and Exchange Commission ("SEC"). Given these risks and uncertainties, you should not place undue reliance on forward-looking statements. Also, forward-looking statements represent management’s beliefs and assumptions as of the date of this report. Except as required by law, we assume no obligation to update forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

This Annual Report on Form 10-K also contains estimates, projections, and other information concerning our industry, our business, and the markets for our products, including data regarding the estimated size and estimated growth for those markets. Information that is based on estimates, forecasts, projections, market research, or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information. Unless otherwise expressly stated, we obtained this industry, business, market, and other data from reports, research surveys, studies, and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data, and similar sources.

PART I

ITEM 1. BUSINESS

Overview

We are a premier life science technology company that designs, develops, and manufactures advanced sequencing solutions that enable scientists and clinical researchers to improve their understanding of the genome and ultimately, resolve genetically complex problems.

Our products and technology under development stem from two highly differentiated core technologies focused on accuracy, quality, and completeness, which include our HiFi long-read sequencing technology and our Sequencing by Binding (SBB™) short-read sequencing technology. Our products address solutions across a broad set of applications including human genetics, plant and animal sciences, infectious disease and microbiology, oncology, and other emerging applications. Long-read sequencing was recognized by the journal *Nature Methods* as its “method of the year” for 2022 for its contributions to biological understanding and future potential. Long-read sequencing has been applied to produce telomere-to-telomere genomes of humans, pangenome references, and has been recognized for its ability to provide more complete views of human variation.

Our focus is on creating some of the world's most advanced sequencing systems to provide our customers with the most complete and accurate view of genomes, transcriptomes, and epigenomes.

Our customers include academic and governmental research institutions, commercial testing and service laboratories, genome centers, public health labs, hospitals and clinical research institutes, contract research organizations (CROs), pharmaceutical companies, and agricultural companies.

Recent Developments

In 2024, we launched Vega™, a revolutionary new benchtop sequencer designed to make accurate long-read sequencing accessible to more laboratories than ever before. Vega delivers up to 60 gigabases of long reads per run and is designed to provide accurate HiFi reads and high-quality genomic, transcriptomic, and epigenetic data for individual labs.

Additionally, in the fourth quarter of 2024, we launched SPRQ chemistry for the Revio system. The SPRQ chemistry will increase the efficiency of loading on Revio SMRT® Cells, reducing DNA input requirements to just 500 ng, a 75% reduction. These lower input requirements will allow HiFi sequencing to support new sample types, like saliva and tumors. The chemistry is also expected to improve sequencing performance, providing an approximately 33% increase in sequencing yield per SMRT Cell. Collectively, these enhancements are designed to enable each Revio instrument to sequence up to 2,500 human whole genomes per year at a cost of just under $500 per human genome.

In the first quarter of 2024, we commenced commercial shipments for the PureTarget repeat expansion panel, a new solution designed to comprehensively analyze 20 genes associated with serious neurological disorders, including challenging-to-sequence genes with tandem repeat expansions. We also released the Nanobind PanDNA kit as a single kit that supports extraction of high quality DNA from many sample types, and the HiFi prep kit as a scalable and automation-friendly library prep for genomic samples.

Our Mission and Impact

Our mission is to enable the promise of genomics to better human health. Genomics is core to all biological processes, and our advanced genomics tools provide scientists and clinical researchers with the insights to better understand biology and health. The “promise of genomics” postulates that medicine, agriculture, public health, drug development, and other disciplines will be transformed by incorporating routine genomic information over the coming decades. We see early progress toward this transformation in the applied use of genomics in areas such as genetic disease, oncology, and sustainable food production. However, legacy genomics technologies have fundamental limitations in progressing these fields toward the promise of genomics. We believe that unleashing the full potential of genomics will require a level of accuracy and completeness inaccessible to legacy technologies. Accuracy and completeness are central to our product

development strategy; thus, we have created some of the most innovative and high-quality genomics solutions on the market. Our products also have enhanced multi-omic capabilities to look beyond the genome to the transcriptome and epigenome, which we believe is key to understanding a full picture of biology.

The Underlying Science

Genetic inheritance in living organisms is conveyed through a naturally occurring information storage system known as deoxyribonucleic acid, or DNA. DNA stores information in linear chains of the chemical bases adenine, cytosine, guanine, and thymine, represented by the symbols A, C, G, and T respectively.

In humans, the genome is comprised of approximately three billion DNA base pairs, which are divided into 23 chromosomes ranging in size from 50 million to 250 million bases. A human carries two copies of the chromosomes, one inherited from each parent. Approximately 23,000 smaller regions within these chromosomes, called genes, contain the blueprints for protein production. The proteins synthesized from these blueprints essentially underlie the operation of all biological systems.

Genome sequencing reads the bases of long fragments of nucleic acids. Initial genome sequencing studies have shown that mutations in these DNA base pairs play a critical role in human disease, contributing to the burgeoning field of genomics. Since then, recent discoveries have highlighted additional complexities of DNA and RNA. These discoveries include the presence of chemical modifications to the bases, such as methylation, and post-translational modification, or the processing of RNA molecules after they are transcribed from the genome, both of which can affect protein synthesis.

Our Principal Markets

Researchers utilize our solutions in human genomics, plant and animal sciences, infectious disease and microbiology, oncology, and other emerging applications.

Human Genomics: Improving rare disease research and understanding

According to a World Health Organization publication, it is estimated that 400 million people worldwide are affected by up to 8,000 distinct rare diseases, with 80% of these believed to be genetic in nature. These genetic diseases are DNA differences, called variants, in the affected individuals. Variants range in size from single nucleotide substitutions to large losses or gains of entire chromosomes. Other sequencing technologies applied to rare disease diagnosis are technologically limited to interrogating small variants, representing only a subset of possible genomic variation. Consequently, most genetic disease cases are undiagnosed, leaving families on multi-year diagnostic odysseys. Sequencing the human genome with long and accurate reads enables the potential detection of all known classes of disease-causing variation. In addition, the ability of PacBio's long-read sequencing technology to detect 5-Methylcytosine DNA methylation, an epigenetic modification shown to alter gene behavior, may enable further advances in research and development in genetic disease diagnosis.

Infectious Disease and Microbiology: Understanding and tracking microbes and pathogens in support of global public health

Our technology has increased the scientific community's understanding of microorganisms and viruses and their malignancy, transmission, and potential resistance to antibiotics or vaccines. Our sequencing technology delivers highly comprehensive and complete genomes, enabling federal agencies, public health organizations, and healthcare providers to conduct wide-ranging research and surveillance activities to:

- generate high quality, complete genome assemblies, revealing variants of all known types, to gain a deeper understanding of community-acquired and hospital-associated infections and transmissions;
- identify and characterize pathogens to inform regional, national, and global public health agencies for preparation and response to rapidly evolving microorganisms; and

- characterize complex microbial communities to understand their role in human, animal, and environmental health.

Oncology: Enable the discoveries of underlying causes of cancer, progression, and relapse

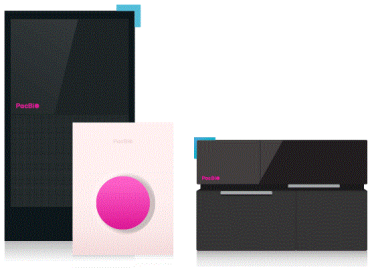
Understanding tumor cells' cellular and molecular complexity is critical in developing more effective targeted cancer therapies. Single-cell transcriptomics is particularly impactful in defining cellular identity and function; however, other technologies miss critical information by only sequencing a portion of RNA. Our long-read RNA sequencing method, single-cell Iso-Seq (scIso-Seq), accurately detects molecular events such as RNA isoforms and expressed mutations and provides gene expression information at the single-cell level. We believe scIso-Seq is uniquely positioned to enable discoveries by researchers of the underlying causes of cancer initiation, progression, and relapse, as well as the discovery by researchers of novel diagnostic, prognostic, and predictive biomarkers that may inform future clinical tests.

As novel discoveries continue to be made using our long-read sequencing technology, we believe our SBB short-read sequencing technology will enable us to meet customers' demands in the expanding non-invasive testing market in oncology. Due to the small amounts of circulating tumor DNA (ctDNA) present in the blood of early-stage cancer patients and those with minimal residual disease (MRD), the presence of cancer often goes undetected, and a more sensitive assay will be required. Based on testing internally and at beta customer sites, we believe our SBB technology has the potential to offer higher accuracy than competitor sequencing technologies, which may in the future support our customers' development of more sensitive tests for the purpose of earlier detection and more robust monitoring of cancer.

Plant and Animal Sciences: Helping scientists answer biological questions for a healthier world

In Plant and Animal Sciences, academic, government and corporate researchers are using our technology to explore and catalog the genetic and biological diversity of organisms for the breeding, propagation, and production of crops and livestock while conserving the planet's natural resources. Our HiFi sequencing enables researchers to build high quality de novo reference genomes and transcriptomes to study variations across species enabling improvements to global conservation initiatives and support the breeding and production of resilient and higher yielding crops to meet the world's growing population and demand.

Our Technology, Products, and Solutions



We have developed HiFi long-read sequencing based on Single-Molecule Real-Time (SMRT) technology, which accurately detects the nucleotide sequence and epigenetic status of individual DNA molecules. We are also expanding our genomic solutions with our short-read SBB chemistry, which offers sensitive sequencing for short-read applications.

Our sales consist of sequencing instruments, nanofluidic chips (SMRT Cells), and reagents for preparing DNA and performing sequencing based on our SMRT technology; flow cells and reagents for preparing DNA and performing sequencing based on our SBB technology, reagents for DNA extraction based on our Nanobind technology; and the services we perform for customers.

HiFi Long-Read Sequencing

Our HiFi long-read sequencing protocol was built upon our SMRT sequencing systems, including consumables and software, and offers customized end-to-end workflows for different sequencing applications. Highly accurate, long sequence reads simplify and accelerate data analysis algorithms, reducing the need for error correction and/or assembly, depending on the application.

Customers use our HiFi long-read sequencing platforms in a wide range of sequencing applications, including whole genome sequencing and *de novo* genome assembly, long-range phasing, targeted sequencing, full-length RNA and single-cell sequencing, characterization of metagenomic communities and other mixed DNA samples, viral genome sequencing, and others. Our technology is also capable of detecting epigenetic markers

simultaneously by analyzing the kinetics of DNA polymerization that is affected, and thereby detectable, by epigenetic markers such as 5-methylcytosine or N^6-methyladenine.

SMRT Technology

Our proprietary SMRT Technology enables the observation of DNA synthesis as it occurs in real-time by harnessing the natural process of DNA replication, which in nature is a highly efficient and accurate process actuated by DNA polymerases. DNA polymerases attach to a strand of DNA to be replicated, examine the individual base at the point it is attached, and then determine which of the four building blocks, or nucleotides (A, C, G, or T), is required to complement that individual base. After determining which nucleotide is required, the polymerases incorporate that nucleotide into the growing strand being produced.

SMRT Sequencing is based on following the activity of DNA polymerase on individual DNA molecules in real time that occurs on our SMRT Cells that are monitored and analyzed within our HiFi long-read sequencing systems: the Revio system, Vega system, Sequel® system, Sequel II system, and Sequel IIe system. Carried out on SMRTbell® templates, which attach hairpin adapters to the ends of double-stranded DNA molecules to be sequenced, SMRT sequencing allows for the successive sequencing of both the forward and reverse strands of the individual DNA molecule occurring multiple times, thereby allowing for the same base of the same molecule to be sequenced more than once in a sequencing run. The base calls from the serial observation of the molecule can be processed to generate the final base call in an analytical procedure called circular consensus sequencing, leading to what we have defined as our HiFi sequence reads, which have high accuracy typically being defined as having greater than 99% read accuracy, but often exceeding greater than 99.9% accuracy, according to research we performed in collaboration with other researchers, subsequently published in *Nature Biotechnology* in 2019. HiFi reads typically are 15-20 kilobases in size, depending on the input fragments, providing sufficient read length with our accuracy to support a multitude of applications across human health, plant and animal, and microbiology, according to research we performed in collaboration with other researchers, subsequently published in *Scientific Data* in 2020. According to an article published by *Genome Research* in 2024, users are able to increase rare disease solve rates using HiFi over short read sequencing. HiFi was also cited as having the ability to resolve complex rearrangements in rare disease cases, subsequently published in an article on *Nature.com* in 2024. The ability to generate single-DNA molecule sequence reads that are both long and highly accurate allows researchers to obtain more contiguous, complete, and accurate genomic data, thereby allowing for greater insights into the complexity of biological systems.

HiFi Long-Read Sequencing Instruments: Revio system, Vega system, and Sequel systems

Our Revio, Vega, Sequel, Sequel II, and Sequel IIe instruments conduct, monitor, and analyze single-molecule biochemical reactions in real time. The instruments use extremely sensitive imaging systems to collect the light pulses emitted by fluorescent reagents allowing the observation of biological processes. Computer algorithms are used to translate the information that is captured by the optics system. Using the recorded information, light pulses are converted into either an A, C, G, or T base call with associated quality metrics. Once sequencing is started, the real-time data is delivered to the system's primary analysis pipeline, which outputs base identity and quality values.

HiFi Consumables

Customers purchase proprietary consumable products to run their PacBio systems, including our SMRT Cells and reagent kits. One SMRT Cell is consumed per sequencing reaction, and scientists can choose the number of SMRT Cells they use per experiment.

We offer several reagent kits, each designed to address a specific step in the core sequencing workflow. A library preparation kit is used to convert DNA into SMRTbell double-stranded DNA library formats and includes typical molecular biology reagents, such as ligase, buffers, and exonucleases. Our binding/polymerase kits include our modified DNA polymerase and are used to bind SMRTbell libraries to the polymerase in preparation for sequencing. Our core sequencing kits contain reagents required for on-instrument, real-time sequencing, including phospholinked nucleotides.

We have developed and are offering a new line of Kinnex™ kits with companion SMRT Link software to enable high-throughput, scalable, cost-effective RNA applications including bulk RNA, single-cell RNA, and 16S rRNA sequencing. The Kinnex kits are built upon the Multiplexed Array Sequencing (MAS-Seq) method for concatenating smaller amplicons into larger fragments to sequence on PacBio's long read sequencers, significantly increasing the molecular yield. Throughput increase in these key RNA applications where the dynamic range of different RNA isoforms (bulk and single-cell) or microbial species (16S) can vary by orders of magnitude, enables characterization of these complex RNA samples while drastically reducing sequencing need.

SBB Short-Read Sequencing

In contrast to SMRT sequencing, SBB reads short fragments of DNA (hundreds of bases instead of kilobases) in a massively parallel manner. Current short-read next generation sequencing technologies available in the market incur various rates of errors in results. Researchers deploy multiple tactics to try to mitigate these effects, including oversampling or implementing complex library preparation methods, yet still face challenges, including missing rare variants.

We believe our proprietary SBB approach will enable researchers to address the gap in detecting rare variants, especially in complex heterogenous samples. Employing a two-phase sequencing chemistry, the SBB approach binds a dye-labeled nucleotide without incorporation into the DNA chain, then removes that base, then blocks and extends with a terminated nucleotide. Using nucleotides with single modifications, we incorporate more native bases, avoiding potential scarring due to fluorescent linker presence. This design helps avoid raw errors and we believe can help us develop a product with substantially greater accuracy than currently marketed short-read sequencing products. SBB enables simplified upfront library preparation, redefines coverage requirements, and reduces bioinformatic workload for downstream analysis. The accuracy of our novel sequencing approach has the potential to advance translational cancer research, drive higher fidelity single-cell applications, and broadly enable clinical sequencing—even in regions of the genome prone to sequencing errors with other short-read sequencing technologies.

SBB Short-Read Sequencing Instrument: Onso system

Our Onso instrument conducts, monitors, and analyzes SBB biochemical reactions. The instrument uses extremely sensitive imaging systems to collect the light emitted by fluorescent reagents allowing the observation of biological processes. Computer algorithms are used to translate the information that is captured by the optics system. Using the recorded information, light pulses are converted into either an A, C, G, or T base call with associated quality metrics. Once sequencing is started, the imaging data is delivered to the system’s primary analysis pipeline, which outputs base identity and quality values.

SBB Consumables

To complement our Onso instrument, we also sell a range of SBB consumable products including flow cells, clustering, and sequencing reagent kits. One flow cell and associated sequencing reagent pack is consumed per sequencing reaction. Each flow cell contains two lanes and scientists can choose to sequence different samples in each lane while additionally combining any number of flow cells needed per experiment.

We offer several reagent kits, each designed to address a specific step in the core sequencing workflow. A library preparation kit is used to convert DNA into SBB compatible, double-stranded DNA library formats and includes typical molecular biology reagents, such as ligase, buffers, and exonucleases. Additionally for library preparation, our conversion kits include reagents to enable scientists to convert existing sequencing libraries into an SBB compatible format. Finally, our clustering and sequencing kits contain all reagents required for generating sequence ready clusters on flow cell and performing SBB sequencing reactions on instrument, respectively.

Our Strategy for Growth

Our main objectives are to grow revenue and expand gross margins through the following four activities:

- **Enabling the full-scale release of the Vega benchtop platform to broaden our market reach.** We believe this platform broadens the long-read market opportunity.
- **Accelerating samples onto the Revio platform via SPRQ chemistry and application kits.** The SPRQ chemistry enables the sub-$500 HiFi genome, improves methylation detection capabilities, and achieves a 75% reduction in DNA input requirements for human whole genome sequencing. These features can drive more samples onto HiFi sequencing than ever before.
- **Investing in future product launches to diversify our offerings.** We continue to develop sequencing systems designed to increase throughput and lower the cost to sequence a genome, which we believe will allow us to address an even larger part of the market. Additionally, we continue to develop kitted-solutions, like our Kinnex Full-length RNA kits and PureTarget, and enhance our on-market sequencers with products like SPRQ chemistry to drive more sequencing volume.
- **Progressing our clinical strategy to improve outcomes and create durability.** In 2024 Revio was increasingly being used in laboratory-developed test (“LDT”) and clinical research settings to consolidate multiple tests and address complex genetic challenges.

Marketing, Sales, Service, and Support

We market our products through a global sales force and through distribution partners in Australia, certain parts of Asia, Europe, the Middle East, Africa, Central America and South America. We plan to continue to invest in growing our marketing, sales, service, and support resources as we drive continued adoption of products, launch new products, and expand our customer base.

Customers

Our customers include academic and governmental research institutions, commercial testing and service laboratories, genome centers, public health labs, hospitals and clinical research institutes, contract research organizations ("CROs"), pharmaceutical companies, and agricultural companies. In general, our customers will isolate, prepare, and analyze genetic samples using PacBio systems in their own laboratories, or they will send their genetic samples to third-party service providers who in turn will sequence the samples with PacBio systems and provide the sequence data back to the customer for further analysis. For example, customers in academic research institutions may have bacteria, animal, or human DNA samples isolated from various sources while agricultural biology companies may have DNA samples isolated from different strains of rice, corn, or other crops.

We receive a significant portion of our revenue from a limited number of customers, many of whom make large purchases on a purchase-order basis. For the years ended December 31, 2024, and 2023, no customer accounted for 10% or more of our total revenue. For the year ended December 31, 2022, one customer exceeded 10% of our total revenue.

We believe that the majority of our current customers are early adopters of sequencing technology. By focusing our efforts on high-value applications and developing whole product solutions around these applications, we seek to drive the adoption of our products across a broader customer base and into numerous large-scale projects. In general, the broader adoption of new technologies by mainstream customers can take a number of years.

Backlog

As of December 31, 2024, our product backlog was approximately $31.2 million, compared to $18.7 million as of December 31, 2023. We define backlog as purchase orders or signed contracts from our customers, which we believe are firm and for which we have not yet recognized revenue. We expect to convert the majority of this

backlog to revenue during 2025; however, our ability to do so is subject to customers who may seek to cancel or delay their orders even if we are prepared to fulfill them.

Manufacturing

We manufacture sequencing instruments, SMRT Cells, and reagents. Our key manufacturing and service facility in Menlo Park, California has received ISO 13485 and ISO 9001 certifications for the design, development, manufacture, distribution, installation, and servicing of its nucleic acid sequencing platforms. We utilize domestic and international subcontract manufacturers for components of the manufacturing process. We purchase both custom and off-the-shelf components from a large number of suppliers worldwide and subject them to significant quality specifications. We periodically conduct quality audits of most of our critical suppliers and have established a supplier qualification program. Some of the components required in our products are currently either sole sourced or single sourced.

Research and Development

We have historically made and plan to continue to make significant investments in research and development. Our research and development efforts focus on programs to develop new and existing platforms, as well as increasing throughput and decreasing costs on behalf of our customers. We are currently developing higher throughput platforms that utilize our HiFi long-read sequencing and SBB short-read sequencing technologies. In addition to platform development, we also innovate across end-to-end workflows to improve usability, as well as develop new applications for the advancement of human health.

Intellectual Property

Developing and maintaining a strong intellectual property portfolio is an important element of our business. We have sought, and will continue to seek, patent protection for our SMRT kit and SBB technology, for improvements to our SMRT kit and SBB technology, as well as for any of our other technologies where we believe such protection will be advantageous.

Our current patent portfolio, including patents exclusively licensed to us, is directed to various technologies, including SMRT nucleic acid sequencing and other methods for analyzing biological samples, zero-mode waveguide ("ZMW") arrays, surface treatments, phospholinked nucleotides and other reagents for use in nucleic acid sequencing, optical short-read nucleic acid sequencing, nucleic acid preparation, and purification components and systems, processes for identifying nucleotides within nucleic acid sequences, and processes for analysis and comparison of nucleic acid sequence data. Some of the patents and applications that we own, as well as some of the patents and applications that we have licensed from other parties, are subject to U.S. government march-in rights, whereby the U.S. government may disregard our exclusive patent rights on its own behalf or on behalf of third parties by imposing licenses in certain circumstances, such as if we fail to achieve practical application of the U.S. government-funded technology, because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations, or to give preference to U.S. industry. In addition, U.S. government-funded inventions must be reported to the government and U.S. government funding must be disclosed in any resulting patent applications.

As of December 31, 2024, we own or hold exclusive licenses to 448 issued U.S. patents, 69 pending U.S. patent applications, 8 pending Patent Cooperation Treaty ("PCT") patent applications, 265 issued foreign patents, and 120 pending foreign patent applications. The full term of the issued U.S. patents will expire between 2025 and 2042. We also have non-exclusive patent licenses with various third parties to supplement our own large and robust patent portfolio.

Other Sequencing Solutions

There are a significant number of companies offering nucleic acid sequencing equipment or consumables. These include, but are not limited to, Illumina, Inc. (“Illumina”), BGI Genomics (also known as MGI or Complete Genomics), Thermo Fisher Scientific Inc. (“Thermo”), Oxford Nanopore Technologies Ltd. (“ONT Ltd.”), Roche Holding AG (“Roche”), Qiagen N.V. (“Qiagen”), Element Biosciences, Inc. (“Element”), Bionano Genomics, Inc. (“Bionano”), Ultima Genomics, Inc. (“Ultima”), Singular Genomics Systems, Inc. (“Singular”) and 10x Genomics, Inc. ("10x"). These companies may have different levels of financial, technical, manufacturing, administrative, and support resources available to them. We expect continued intense competition within the overall nucleic

acid sequencing market as there are several companies developing new sequencing technologies, products and/or services. Increased competition may result in pricing pressures, which could harm our sales, profitability, or share of supply.

In order for us to maintain and increase our sales, we will need to demonstrate that our products deliver superior performance and value as a result of our key differentiators. Our HiFi long-read sequencing will need to continue to deliver very high consensus accuracy and long-read lengths and include single-molecule, real-time resolution, with the ability to detect real-time kinetic information, fast time-to-result and flexibility, as well as support the breadth and depth of current and future applications.

Government Regulation

The development, testing, manufacturing, marketing, post-market surveillance, distribution, advertising, and labeling of certain medical devices, including in vitro diagnostic products and laboratory-developed tests, are subject to regulation in the United States by the Center for Devices and Radiological Health of the U.S. Food and Drug Administration ("FDA") under the Federal Food, Drug, and Cosmetic Act ("FDCA") and comparable state and foreign regulatory agencies. FDA defines a medical device as an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent, or other similar or related article, including any component part or accessory, which is (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, in man or other animals, or (ii) intended to affect the structure or any function of the body of man or other animals and which does not achieve any of its primary intended purposes through chemical action within or on the body of man or other animals and which is not dependent upon being metabolized for the achievement of any of its primary intended purposes. Medical devices to be commercially distributed in the United States must receive from the FDA either clearance of a pre-market notification, known as 510(k), or pre-market approval pursuant to the FDC Act prior to marketing, unless subject to an exemption.

We currently label and sell our products for research use only (“RUO”) and primarily sell them to research customers in various settings, including academic institutions, life sciences and research laboratories that conduct research, and biopharmaceutical and biotechnology companies for non-diagnostic and non-clinical purposes. Our current RUO products are not intended or promoted for use in clinical practice in the diagnosis of disease or other conditions, and they are labeled for research use only, not for use in diagnostic procedures. Accordingly, we believe our products, as we intend to market them, are not subject to regulation by the FDA. Rather, while FDA regulations require that RUO products be labeled for research use only and to market and distribute RUO products in accordance with the FDA RUO guidance, the regulations do not subject RUO products to the FDA’s jurisdiction or the broader pre- and post-market controls for medical devices. However, in the future, certain of our products or related applications, such as those that may be developed for clinical uses, could be subject to FDA regulation, or the FDA’s regulatory jurisdiction could be expanded to include our products. If we wish to label and 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. In the future, products that we may 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 U.S., if we market our products for use in performing clinical diagnostics, such products would be subject to regulation by the FDA under pre-market and post-market control as medical devices, unless an exemption applies, and we would be required to obtain either prior 510(k) clearance or prior pre-market approval from the FDA before commercializing the product. Obtaining the requisite regulatory approvals can be expensive and may involve considerable delay. Some countries have regulatory review processes that are substantially longer than U.S. processes. Failure to obtain regulatory approval in a timely manner and meet all of the local regulatory requirements including language and specific safety standards in any foreign country in which we plan to market our products could prevent us from marketing products in such countries or subject us to sanctions and fines. 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.

In 2013, the FDA issued a final guidance on products labeled for research use only, which, among other things, reaffirmed that a company may not make any clinical or diagnostic claims about an RUO product, stating that merely including a labeling statement that the product is for research purposes only will not necessarily render the device exempt from the FDA’s clearance, approval, or other regulatory requirements if the totality of circumstances surrounding the distribution of the product indicates that the manufacturer knows its product is being used by customers for diagnostic uses or the manufacturer intends such a use. These circumstances

may include, among other things, written or verbal marketing claims regarding a product's performance in clinical diagnostic applications and a manufacturer's provision of technical support for such activities. If FDA were to determine, based on the totality of circumstances, that our products labeled and marketed for RUO are intended for diagnostic purposes, they would be considered medical devices that will require clearance or approval prior to commercialization. Further, sales of devices for diagnostic purposes may subject us to additional healthcare regulation. We continue to monitor the changing legal and regulatory landscape to ensure our compliance with any applicable rules, laws and regulations.

The FDA classifies medical devices into one of three classes. Devices deemed to pose lower risk to the patient are placed in either Class I or II, which, unless an exemption applies, requires the manufacturer to submit a pre-market notification requesting FDA clearance for commercial distribution pursuant to Section 510(k) of the FDCA. This process, known as 510(k) clearance, requires that the manufacturer demonstrate that the device is substantially equivalent to a previously cleared and legally marketed 510(k) device or a "pre-amendment" Class III device for which pre-market approval applications ("PMAs") have not been required by the FDA. This FDA review process typically takes from four to twelve months, although it can take longer. Most Class I devices are exempted from this 510(k) pre-market submission requirement. If no legally marketed predicate can be identified for a new device to enable the use of the 510(k) pathway, the device is automatically classified under the FDCA as Class III, which generally requires pre-market approval, or PMA approval. However, the FDA can reclassify or use "de novo classification" for a device that meets the FDCA standards for a Class II device, permitting the device to be marketed without PMA approval. To grant such a reclassification, FDA must determine that the FDCA's general controls alone, or general controls and special controls together, are sufficient to provide a reasonable assurance of the device's safety and effectiveness. The de novo classification route is generally less burdensome than the PMA approval process.

Devices deemed by the FDA to pose the greatest risk, such as life-sustaining, life-supporting, or implantable devices, or those deemed not substantially equivalent to a legally marketed predicate device, are placed in Class III. Class III devices typically require PMA approval. To obtain PMA approval, an applicant must demonstrate the reasonable safety and effectiveness of the device based, in part, on data obtained in clinical studies. All clinical studies of investigational medical devices to determine safety and effectiveness must be conducted in accordance with FDA's investigational device exemption ("IDE") regulations, including the requirement for the study sponsor to submit an IDE application to FDA, unless exempt, which must become effective prior to commencing human clinical studies. PMA reviews generally last between one and two years, although they can take longer. Both the 510(k) and the PMA processes can be expensive and lengthy and may not result in clearance or approval. If we are required to submit our products for pre-market review by the FDA, we may be required to delay marketing and commercialization while we obtain pre-market clearance or approval from the FDA. There would be no assurance that we could ever obtain such clearance or approval.

All medical devices, including IVDs, that are regulated by the FDA are also subject to the quality system regulation. 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. 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 diagnostic 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 the future. In addition, regulatory agencies may introduce new requirements that may change the regulatory requirements for us or our customers, or both.

As noted above, although our products are currently labeled and sold for research purposes only, the regulatory requirements related to marketing, selling, and supporting such products could be uncertain and depend on the totality of circumstances. This uncertainty exists 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.

For example, in some cases, our customers, including laboratories that offer services as part of our certified service provider program, may use our RUO products in their own LDTs or in other FDA-regulated products for clinical diagnostic use. The FDA has historically exercised enforcement discretion in not enforcing the medical device regulations against LDTs and LDT manufacturers. The FDA has issued warning letters to genomics labs for illegally marketing genetic tests that claim to predict patients' responses to specific medications, noting that the FDA has not created a legal "carve-out" for LDTs and retains discretion to take action when appropriate, such as when certain genomic tests raise significant public health concerns. As laboratories and manufacturers

develop more complex genetic tests and diagnostic software, the FDA may increase its regulation of LDTs. Legislative and administrative proposals to amend the FDA's oversight of LDTs have been introduced in recent years, including the Verifying Accurate Leading-edge IVCT Development Act of 2021 (the "VALID Act"). In September 2022, Congress passed the FDA user fee reauthorization legislation without substantive FDA policy riders, including the VALID Act. In May 2024, the FDA issued a final rule that phases out its enforcement discretion for most LDTs and amends the FDA's regulations to make explicit that in vitro diagnostics are medical devices under the FDCA, including when the manufacturer of the diagnostic product is a laboratory. This final rule is being challenged in federal courts. Further, in June 2024, the U.S. Supreme Court overruled the *Chevron* doctrine, which gives deference to regulatory agencies' statutory interpretations in litigation against federal government agencies, such as the FDA, where the law is ambiguous. This landmark Supreme Court decision may invite various stakeholders to bring lawsuits against the FDA to challenge longstanding decisions and policies of the FDA, including this LDT final rule. The new Trump administration, including changes in the leadership at the FDA, may issue new policies and regulations that can impact the compliance status of our products or that of our customers. If our products become subject to FDA regulation as medical devices, we would need to invest significant time and resources to ensure ongoing compliance with FDA quality system regulations and other post-market regulatory requirements.

If our products become subject to FDA regulation as medical devices, the regulatory clearance or approval and the maintenance of continued and post-market regulatory compliance for such products will be expensive, time-consuming, and uncertain both in timing and in outcome. Commercialization of such regulated medical devices can increase our exposure under additional laws. For example, medical device companies are subject to additional healthcare regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which they conduct their business and may constrain the financial arrangements and relationships through which we research, as well as sell, market and distribute any medical products for which we obtain marketing authorization. Such laws include, without limitation, state and federal anti-kickback, fraud and abuse, false claims, data privacy and security, and transparency laws and regulations related to payments and other transfers of value made to physicians and other healthcare providers. If our operations are found to be in violation of any of such laws or any other governmental regulations that apply, we may be subject to penalties, including, without limitation, administrative, civil, and criminal penalties, damages, fines, disgorgement, the curtailment or restructuring of operations, integrity oversight and reporting obligations, exclusion from participation in federal and state healthcare programs and imprisonment.

In the future, to the extent we develop any clinical diagnostic assays, we may pursue payment for such products through a diverse and broad range of channels and seek coverage and reimbursement by government health insurance programs and commercial third-party payors for such products. In the United States, there is no uniform coverage for clinical laboratory tests. The extent of coverage and rate of payment for covered services or items vary from payor to payor. Obtaining coverage and reimbursement for such products can be uncertain, time-consuming, and expensive, and, even if favorable coverage and reimbursement status were attained for our tests, to the extent applicable, less favorable coverage policies and reimbursement rates may be implemented in the future. Changes in healthcare regulatory policies could also increase our costs and subject us to additional regulatory requirements that may interrupt commercialization of our products, decrease our revenue and adversely impact sales of, and pricing of and reimbursement for, our products.

International sales of medical devices are subject to foreign government regulations, which vary substantially from country to country. In the future, if we decide to distribute or market our diagnostic products as IVDs in Europe, such products are subject to regulation under the European Union ("EU") IVD Medical Device Regulation ("IVDR") EU 2017/746. Outside of the EU, regulatory approval needs to be sought on a country-by-country basis in order to market medical devices. Although there is a trend towards harmonization of a quality system, standards and regulations in each country may vary substantially, which can affect timelines of introduction.

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.

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.

Human Capital

As of December 31, 2024, we had 575 full-time employees. Of these employees, 207 were in research and development, 67 were in operations, 39 were in service, 187 were in marketing and sales, and 75 were in general and administration. With the exception of our field-based sales, marketing, and service teams, the majority of our employees are in California. None of our employees are represented by labor unions or are covered by a collective bargaining agreement with respect to their employment. We have not experienced any work stoppages, and we consider our relationship with our employees to be good.

Talent Acquisition and Retention

We recognize that our employees largely contribute to our success. To this end, we support business growth by seeking to attract and retain best-in-class talent. Our talent acquisition team uses internal and external resources to recruit highly skilled candidates globally.

Total Rewards

Our total rewards philosophy has been to invest in our workforce by offering competitive and fair compensation and benefits packages. We provide employees with compensation packages that include base salary, short-term incentives such as annual bonuses and commissions, and long-term equity awards. We also offer comprehensive employee benefits, which vary by country and region, such as life, disability, and health insurance, health savings and flexible spending accounts, time off benefits, paid parental leave, Employee Stock Purchase Program, and a 401(k) plan. It is our expressed intent to be an employer of choice in our industry by providing market-competitive compensation and benefits packages.

Health, Safety, and Wellness

The health, safety, and wellness of our employees is a priority in which we have always invested and will continue to do so. We provide our employees and their families with access to a variety of innovative, flexible, and convenient health and wellness programs. Program benefits are intended to provide protection and security, so employees can have peace of mind concerning events that may require time away from work or that may impact their financial well-being. These programs are highlighted and updated regularly on our internal benefits platform.

Diversity, Equity, and Inclusion

We believe a diverse workforce is critical to our success. Our mission is to value differences in races, ethnicities, religions, nationalities, genders, ages, sexual orientations, as well as education, skill sets and experience. We offer training programs on diversity awareness to help employees understand, recognize, respond, and prevent bias throughout the employee lifecycle. We are focused on inclusive hiring practices, fair and equitable treatment, organizational flexibility, and training and resources.

Training and Development

We believe in encouraging employees to become lifelong learners by providing ongoing learning and leadership training opportunities. We provide a scaled learning platform of on-demand and virtual classroom learning focused on personal and professional development. While we strive to provide real-time recognition of employee performance, we have a formal annual review process not only to determine pay and equity adjustments tied to individual contributions, but to identify areas where training and development may be needed.

Available Information

Our website is located at www.pacb.com. The information posted on, or that can be accessed through, our website is not incorporated by reference into this Annual Report on Form 10-K, and the inclusion of our website address is an inactive textual reference only. Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to reports filed or furnished pursuant to Sections 13(a) and 15(d) of the Exchange Act are available free of charge through the “Investor Relations” section of our website as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The SEC also maintains a website that contains our SEC filings. The address of the site is www.sec.gov.

Additionally, we use our website (including the blog section of our website) as well as our X (formerly Twitter) account (@pacbio) as a channel of distribution for important company information and to comply with our disclosure obligations under Regulation FD. Important information, including press releases, analyst presentations, and financial information regarding us, as well as corporate governance information, is routinely posted and accessible on the “Investor Relations” section of the website, which is accessible by clicking on the tab labeled “Company - Investors” on our website home page. In addition, important information is routinely posted and accessible on the blog section of our website, which is accessible through our website at www.pacb.com/blog, as well as our X account (@pacbio). The contents of our website and our X account are not incorporated by reference into this Annual Report on Form 10-K or in any other report or document we file with the SEC, and any references to our website or X account are intended to be inactive textual references only.

ITEM 1A. RISK FACTORS

You should carefully consider the risks and uncertainties described below, together with all of the other information in our public filings with the SEC, which could materially affect our business, financial condition, results of operations and prospects. The risks described below are not the only risks facing us. Risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially affect our business, financial condition, results of operations and prospects. In addition, any worsening of the economic environment may exacerbate the risks described below, any of which could have a material impact on us. This situation is changing rapidly, and additional impacts may arise that we are not aware of currently.

Summary Risk Factors

The following is a summary of the principal risks that could adversely affect our business, operations, and financial results. Such risks are discussed more fully below and include, but are not limited to, risks related to:

- our ability to successfully market, commercialize, and sell current and future products and related maintenance services;
- our ability to achieve profitability for our business;
- our ability to implement required expense reduction initiatives;
- our ability to repay our debt and fund our long-term operations;
- our ability to successfully leverage and integrate our acquisitions and future acquisitions;
- our ability to successfully research, develop and timely manufacture our current and future products;
- management of new product introductions and transitions, resultant costs, and ability of new products to generate promised performance;
- recent significant changes to our leadership team and resultant disruptions to our business;
- retention, recruitment, and training of senior management, key personnel, scientists and engineers;
- our ability to further penetrate nucleic acid sequencing applications, as well as grow product demand;
- our reliance on outsourcing to other companies for manufacturing certain components and sub-assemblies, some of which are sole-sourced;
- the impact of tariffs recently imposed by the U.S. government and its trading partners in response, other possible tariffs or trade protection measures, import or export licensing requirements, new or different customs duties, trade embargoes and sanctions and other trade barriers;
- our ability to consistently manufacture our instruments and consumables to meet customers' specifications, quantity, cost, or performance requirements;
- the high amount of competition we face in our industry;
- our ability to attract customers and increase sales of current and future products;
- our reliance on a limited number of customers for a significant portion of our revenues, including academic, research and government institutions, which may be impacted by reductions in funding or targeted cancellations of certain grants or contracts by the U.S. federal government;
- the complexity of our products giving rise to defects or errors;
- our unpredictable and lengthy sales cycles;
- the possibility that our goodwill or intangible assets could become impaired;
- adverse effects resulting from political and economic tensions between the United States and other countries, including China and Russia, and other geopolitical uncertainties;
- securing and maintaining patent or other intellectual property protection for our products and related improvements;
- current and future legal proceedings filed against us claiming intellectual property infringement;

- the potential adverse impact of health epidemics;
- potential cybersecurity incidents and security breaches;
- governmental regulations that burden operations or narrow the market for our products;
- adverse effects resulting from enhanced trade tariffs, import restrictions, export restrictions, or other trade barriers;
- evolving ethical, legal, privacy, social, and regulatory concerns regarding genetic testing;
- volatility of the price of our common stock; and
- our stock price falling as a result of future offerings or sales of securities.

Our risk factors are not guarantees that no such conditions exist as of the date hereof and should not be interpreted as an affirmative statement that such risks or conditions have not materialized, in whole or in part.

Risks Related to Our Business

The commercialization and sales of our current or future products may be unsuccessful or less successful than anticipated. While we plan to continue pursuing new products and expand into adjacent markets, we have limited experience in managing and selling multiple products and, as a result, may face challenges selling in new markets and fail to successfully carry out these initiatives, which may adversely impact our business, financial condition or results of operation.

We have made and expect to continue making substantial investments to develop new products and enhance our existing products through our acquisitions and research and development efforts. For example, we commenced commercial shipments of Revio, our new long-read sequencing system in the first quarter of 2023, and commenced commercial shipments of Onso, our new SBB short-read platform, in the third quarter of 2023. We also began taking orders and shipping our new Vega benchtop long-read sequencing system in the fourth quarter of 2024. Our future success is substantially dependent on our ability to successfully develop and commercialize our products, as well as acquired technologies, which are anticipated to be used in demanding scientific research that requires substantial levels of accuracy and precision. In addition, we may not be successful in transitioning our prior generation products to our Revio and Vega products, or transitioning users of other third party sequencing platforms to our portfolio of products, and could incur related obsolete inventory charges and losses on firm purchase commitments. Customers may also be slower than we anticipate in making new capital equipment acquisitions, especially in the current economic environment. Due to challenges we may experience in developing and marketing our existing products and launching new products, we may not be able to effectively:

- manage the timeliness of our new product introductions and the rate at which sales of our new products may cannibalize sales of our existing products or manage sales and marketing of multiple sequencing platforms;
- drive adoption of our current and future products;
- maintain our competitive position by continuing to attract and retain customers for our products;
- provide appropriate levels of customer training and support for our products;
- implement an effective marketing strategy to promote awareness of our products;
- develop and implement an effective sales and distribution strategy for our current and future products;
- develop, manufacture and commercialize new products or achieve an acceptable return on our manufacturing or research and development efforts and expenses;
- comply with regulatory requirements applicable to our products;
- anticipate and adapt to changes in our market;
- accommodate customer expectations and demands with respect to our products, increase product adoption by our existing customers or develop new customer relationships;
- deliver our early access systems to our external early access testing sites or complete our external early access testing program on our currently expected timelines;

- overcome unexpected challenges discovered during early access testing;
- complete the scientific and technical validation of new products on our currently expected timeline or at all;
- deliver our future products in a timely manner to our customers;
- grow our market share by marketing and selling our products for new and additional applications;
- manage the significant burdens that expanding our existing or future products into current and new markets may impose on marketing, compliance, and other administrative and managerial resources;
- maintain and develop strategic relationships with vendors, manufacturers, and other industry partners to acquire necessary materials for the production of, and to develop, manufacture and commercialize, our existing or future products;
- adapt or scale our manufacturing activities to meet performance specifications and potential demand at a reasonable cost;
- avoid infringement and misappropriation of third-party intellectual property;
- obtain and maintain any necessary licenses to third-party intellectual property on commercially reasonable terms;
- obtain valid and enforceable patents that give us a competitive advantage or enforce existing patents;
- protect our proprietary technology; and
- attract, retain, and motivate qualified personnel.

The risks noted above, especially with respect to the marketing, sales, and commercialization of our products, may be heightened by the impact of current uncertain market and other conditions. In addition, a high percentage of our expenses is and will continue to be fixed. Accordingly, if we do not generate revenue as and when anticipated, we could suffer a material adverse effect on our business, financial conditions, results of operations and prospects.

We evaluate goodwill and other intangible assets with indefinite useful lives for impairment annually and whenever events or changes in circumstances indicate that the fair value of such assets may be less than the carrying value. We also perform regular reviews to determine if any event has occurred that may indicate that the carrying values of our intangible assets with finite lives and other finite-lived assets are impaired. Events that would indicate impairment and trigger an interim impairment test include, but are not limited to, unexpected adverse business conditions, weak demand for a specific product line or business, economic factors, shifting focus to certain lines of business, unanticipated technological changes or competitive activities, loss of key personnel, changes in business strategy, and acts by governments or courts. The occurrence of any of these events, may require us to record future impairment charges. For example, we recorded $184.5 million of impairment charges during the year ended December 31, 2024 as described in additional detail in *Note 4. Balance Sheet Components* in Part II, Item 8 of this Annual Report on Form 10-K. Any such charges may adversely affect our results of operations.

We have incurred losses to date, and we expect to continue to incur significant losses as we develop our business and may never achieve profitability.

We have generally incurred net losses each quarter since inception, and we cannot be certain if or when we will produce sufficient revenue from our operations to support our costs. Even if profitability is achieved in the future, we may not be able to sustain profitability on a consistent basis. We expect to continue to incur substantial losses and negative cash flow from operations for the foreseeable future. Although we initiated expense reduction plans during the second quarter of 2024, we do not expect to be profitable in 2025, and there can be no assurance that these expense reduction initiatives will be successful in helping us achieve profitability.

Our net losses since inception and our expectation of incurring substantial losses and negative cash flow for the foreseeable future could:

- make it more difficult for us to satisfy our obligations;
- increase our vulnerability to general adverse economic and industry conditions;

- limit our ability to fund future working capital, capital expenditures, research and development and other business opportunities;
- increase the volatility of the price of our common stock;
- limit our flexibility to react to changes in our business and the industry in which we operate;
- place us at a disadvantage to other companies that offer nucleic acid sequencing equipment or consumables; and
- limit our ability to borrow additional funds.

In addition, inflationary pressure, including as a result of supply shortages, has adversely impacted and could continue to adversely impact our financial results, and our operating costs may increase. We may not fully offset these cost increases by raising prices for our products and services, which could result in downward pressure on our margins. Further, our customers may choose to reduce their business with us if we increase our pricing.

Any or all of the foregoing may have a material adverse effect on our business, operations, financial condition, and prospects. An impairment in value of our tangible or intangible assets could also be recorded as a result of weaker economic conditions. For more information on impairment considerations, see "*—The commercialization and sales of our current or future products may be unsuccessful or less successful than anticipated. While we plan to continue pursuing new products and expand into adjacent markets, we have limited experience in managing and selling multiple products and, as a result, may face challenges selling in new markets and fail to successfully carry out these initiatives, which may adversely impact our business, financial condition or results of operation.*" above.

Expense reduction initiatives could be disruptive to our operations and adversely affect our results of operations and financial condition, and we may not realize some or all of the anticipated benefits of these initiatives, whether in the time frame anticipated or at all.

Our expense reduction initiatives comprise, among other things, workforce reductions, facilities downsizing and a refined pipeline of development activities. For example, during the second quarter of 2024 we initiated plans to reduce certain of our annualized run-rate operating expenses by the end of the year, with the intent of better aligning our organizational structure and resources with our strategic initiatives. The implementation of these expense reduction initiatives, including the impact of workforce reductions, could impair our ability to invest in developing, marketing and selling new and existing products, be disruptive to our operations, make it difficult to attract or retain employees, result in higher than anticipated charges, divert the attention of management, result in a loss of accumulated knowledge, impact our customer and supplier relationships, and otherwise adversely affect our results of operations and financial condition. In addition, our ability to complete our expense reduction initiatives and achieve the anticipated benefits within the expected time frame is subject to estimates and assumptions and may vary materially from our expectations, including as a result of factors that are beyond our control. Furthermore, our efforts to stabilize our business may not be successful.

We are not cash flow positive and may not have sufficient cash to make required payments under the terms of our debt or fund our long-term planned operations.

Our operations have consumed substantial amounts of cash since inception, and we expect to continue to incur substantial losses and negative cash flow from operations for the foreseeable future. Additional funds may not be available on terms acceptable to us or at all. We have incurred significant debt, and we may incur additional debt in the future. As of December 31, 2024, we had outstanding approximately $200.0 million aggregate principal amount of our 1.50% Convertible Senior Notes due 2029 (the "2029 Notes") and $441.0 million aggregate principal amount of our 1.375% Convertible Senior Notes due 2030 (the "2030 Notes" and together with the 2029 Notes, the "Notes"). As discussed in *Note 5. Convertible Senior Notes* in Part II, Item 8 of this Annual Report on Form 10-K, we exchanged the remaining approximately $459.0 million in aggregate principal amount of our 1.50% Convertible Senior Notes due 2028 (the "2028 Notes") for (i) $200.0 million aggregate principal amount of the 2029 Notes, (ii) 20,451,570 shares of common stock and (iii) $50.0 million of cash (the "Exchange Transaction"). The Exchange Transaction closed on November 21, 2024. We may not have sufficient cash to make required payments under the terms of this debt, and should this occur, debt holders have rights senior to common stockholders to make claims on our assets. In addition, if we do not have sufficient cash to make the required payments at maturity, we may need to raise additional capital, which could result in dilution of our existing investors, or refinance or restructure our debt, which will depend on, among other things, the condition of the capital markets and our financial condition at such time, and which may be at higher interest rates. We may not be able to issue equity securities due to unacceptable terms and conditions to us in the capital markets. To the extent that we intend to raise additional funds through the sale of our common stock, downward fluctuations in our stock price could adversely affect such fundraising efforts. Furthermore, equity financings normally involve shares sold at a discount to the current market price and fundraising through sales of additional shares of common stock or other equity securities will have a dilutive effect on our existing investors. We may be required to seek equity financing at a time when the market price for our common stock is low, which would further dilute ownership for existing common stockholders.

We believe that our growth will depend, in part, on our ability to fund our commercialization efforts and our efforts to develop new products and improve our existing products. To the extent our existing resources are not sufficient, it may require us to delay, or even not allow us to conduct any or all of these activities that we believe would be beneficial for our future growth. We may need to raise additional funds through public or private debt or equity financing or alternative financing arrangements, which may include collaborations or licensing arrangements. If we are unable to raise funds on favorable terms, or at all, we may have to reduce our cash burn rate and may not be able to support our commercialization efforts, launching of new products, or operations, or to increase or maintain the level of our research and development activities.

If we are unable to generate sufficient cash flows or to raise adequate funds to finance our forecasted expenditures, we may have to make significant changes to our operations, including delaying or reducing the scope of, or eliminating some or all of, our development programs. We also may have to reduce sales, marketing, engineering, customer support or other resources devoted to our existing or new products, or we may need to cease operations. Any of these actions could materially impede our ability to achieve our business objectives and could materially harm our operating results, and there can be no assurance that any of these actions would be successful. If our cash, cash equivalents and investments are insufficient to fund our projected operating requirements and we are unable to raise capital, it could have a material adverse effect on our business, financial condition and results of operations and prospects.

We have made acquisitions and, in the future, may continue to acquire businesses, technologies or assets, form joint ventures or make other strategic investments with companies that could adversely affect our operating results, dilute our stockholders' ownership, or cause us to incur debt or significant expense.

As part of our business strategy, we have acquired and expect to continue to pursue acquisitions of complementary businesses, technologies, or assets. We may also pursue technology license arrangements, strategic alliances or investments that complement our business.

Acquisitions and strategic transactions involve numerous risks, any of which could harm our business and negatively affect our financial condition and results of operations, including:

- intense competition for suitable acquisition targets, which could increase prices and adversely affect our ability to consummate deals on favorable or acceptable terms;
- failure or material delay in closing a transaction;

- transaction-related lawsuits or claims;
- difficulties in integrating the technologies, operations, existing contracts, and personnel of an acquired company;
- difficulties in retaining key employees or business partners of an acquired company;
- difficulties in retaining suppliers, partners, or customers of an acquired company;
- challenges with integrating the brand identity of an acquired company with our own;
- diversion of financial and management resources from existing operations or alternative acquisition opportunities;
- failure to realize the anticipated benefits or synergies of a transaction;
- difficulties in developing technology post-acquisition;
- failure to identify the problems, liabilities, or other shortcomings or challenges of an acquired company or technology, including issues related to intellectual property, regulatory compliance practices, litigation, revenue recognition or other accounting practices, or employee or user issues;
- risks that regulatory bodies may enact new laws or promulgate new regulations that are adverse to an acquired company or business;
- risks that regulatory bodies do not approve our acquisitions or business combinations or delay such approvals;
- theft of our trade secrets or confidential information that we share with potential acquisition candidates or other potential strategic partners;
- risk that an acquired company or investment in new services cannibalizes a portion of our existing business; and
- adverse market reaction to an acquisition or other strategic transaction.

To finance any acquisitions or other strategic investments, we may raise additional funds, which could adversely affect our existing stockholders and our business. If the price of our common stock is low or volatile, we may not be able to acquire other companies for stock. In addition, our stockholders may experience substantial dilution as a result of additional securities we may issue for acquisitions. Open market sales of substantial amounts of our common stock issued to stockholders of companies we acquire could also depress our stock price. Additional funds may not be available on terms that are favorable to us, or at all.

If we fail to address the foregoing risks or other problems encountered in connection with past or future acquisitions of businesses, new technologies, services, and other assets and strategic investments, or if we fail to successfully integrate such acquisitions or investments, our business, financial condition, and results of operations could be adversely affected, including potential impairments of goodwill and intangible assets.

If we are unable to successfully develop and timely manufacture our current and future products, including with respect to SMRT Cells, Sequel, Sequel II/IIe, Revio, Onso, and Vega systems, and other SMRT Cell, HiFi, and SBB products under development, and related products, our business may be adversely affected.

Considering the highly complex technologies involved in our products, there can be no assurance that we will be able to manufacture and commercialize our current and future products on a timely basis or continue providing adequate support for our existing products. The commercial success of our products, including the Sequel, Sequel II/IIe, Revio, Onso and Vega systems, and the products under development, including acquired technologies, depends on a number of factors, including performance and reliability of the systems, our anticipating and effectively addressing customer preferences and demands, the success of our sales and marketing efforts, effective forecasting and management of product demand, purchase commitments and inventory levels, effective management of manufacturing and supply costs, and the quality of our products, including consumables such as SMRT Cells and reagents. Should we face delays in or discover unexpected defects during the further development or manufacturing process of instruments or consumables related to our products, including with respect to SMRT Cells, reagents, Sequel, Sequel II/IIe, Revio, Onso, and Vega systems, and other SMRT Cell, HiFi, and SBB products under development, including acquired technologies, and including any delays or defects in software development or product functionality, the timing and success of the continued rollout and scaling of our products may be significantly impacted, which may materially and negatively impact our revenue and gross margin. The ability of our customers to successfully utilize our products will also depend on our ability to deliver high quality SMRT Cells and reagents. We have designed SMRT Cells and other consumables specifically for the Sequel, Sequel II/IIe, Revio and Vega systems, and may need to develop in the future, other customized SMRT Cells and consumables for our future products. Our production of the SMRT Cells for the Sequel and Sequel II/IIe systems has been and may in the future, including with respect to the Revio system, be below desired levels and yields, and we have experienced and may experience in the future manufacturing delays, product or quality defects, SMRT Cell variability, and other issues. The performance of our consumables is critical to our customers' successful utilization of our products, and any defects or performance issues with our consumables would adversely affect our business. All of the foregoing could have a material adverse effect on our ability to sell our products or result in other material adverse effects on our business, operations, financial condition, operations and prospects.

The development of our products is complex and costly. Problems in the design or quality of our products may have a material and adverse effect on our brand, business, financial condition, and operating results, and could result in us losing our certifications from the International Organization for Standardization ("ISO"). If we were to lose ISO certification, then our customers might choose not to purchase products from us and this could adversely impact our ability to develop products approved for clinical uses. Unanticipated problems with our products could divert substantial resources, which may impair our ability to support our new and existing products and could substantially increase our costs. If we encounter development challenges or discover errors in our products late in our development cycle, including during external beta testing, we may be forced to undertake design and/or production changes, delay product shipments or the scaling of manufacturing or supply. The completion of the production and external testing of our beta systems may also take longer than currently planned, cost more than currently expected and the scientific and technical validation may not be completed on our currently expected timelines or at all. Such testing may also expose fundamental flaws in our products that may cause us to abandon the further development of such products.

If the continued rollout of our current and future products, including with respect to the SMRT Cell, the Sequel, Sequel II/IIe, Revio, Onso and Vega systems, is delayed or is not successful or less successful than anticipated, then we may not be able to achieve an acceptable return, if any, on our substantial research and development efforts, and our business may be materially and adversely affected. The expenses or losses associated with delayed or unsuccessful product development or lack of market acceptance of our existing and new products, including the SMRT Cell and the Sequel, Sequel II/IIe, Revio, Onso and Vega systems could materially and adversely affect our business, operations, financial condition, and prospects.

Our research and development efforts may not result in the benefits that we anticipate, and our failure to successfully market, sell, and commercialize our current and future products could have a material adverse effect on our business, financial condition and results of operations.

We have dedicated significant resources to developing our current products. We are also engaged in substantial and complex research and development efforts, which, if successful, may result in the introduction of new products in the future, including in connection with the SMRT Cell and the Sequel II/IIe, Revio, Onso and Vega systems, in addition to other products currently under development, including acquired technologies. Our research and development efforts are complex and require us to incur substantial expenses and we may not be able to develop, manufacture and commercialize new products or obtain regulatory approval if necessary. We may divert significant resources to research and development initiatives that do not result in commercialized products, and even if these efforts do result in commercialized products, there can be no assurance that such products will compete successfully in the market or achieve an acceptable return, if any, on our research and development efforts and expenses. Moreover, our joint research and development efforts with partners require significant management attention and operational resources. If we are unable to successfully manage such joint research and development efforts, our future results may be adversely impacted. Furthermore, we will need to continue to expand our internal capabilities or seek new partnerships or collaborations, or both, in order to successfully develop, market, sell and commercialize our products for and in the markets we seek to reach. If we are unable to do so or are delayed, then this could materially and adversely affect our business, operations, financial condition, and prospects.

We must successfully manage new product introductions and transitions and the development of acquired technologies, for which we may incur significant costs during these transitions and development, and these efforts may not result in the benefits we anticipate.

If our products and services fail to deliver the performance, scalability or results expected by our current and future customers, or are not delivered on a timely basis, our reputation and credibility may suffer, our current and future sales and revenue may be materially harmed and our business may not succeed. For instance, if we are not able to successfully execute on the commercialization of the Revio HiFi long-read sequencing system, the Onso SBB short-read sequencing system, and the Vega benchtop long-read sequencing system, and each of their related consumables, and any future products that may be developed for research, medical and clinical uses, including acquired technologies, it could have a material adverse effect on our business, financial condition and results of operations. In addition, the introduction of future products, including with respect to future long-read and short-read products, and related consumables, has and may in the future lead to our limiting or ceasing development of further enhancements to our existing products as we focus our resources on new products, and has resulted and could in the future result in reduced marketplace acceptance and loss of sales of our existing products, materially adversely affecting our revenue and operating results. The introduction of new products, including the recent commercialization of our Revio, Onso and Vega systems, has had and may in the future also have a negative impact on our revenue in the near-term as our current and future customers have delayed or cancelled and may in the future delay or cancel orders of existing products in anticipation of new products and we may also be pressured to decrease prices for our existing products. Our experience in managing product transitions is limited, and we have experienced, and may in the future experience, difficulty in managing or forecasting customer reactions, purchasing decisions or transition requirements with respect to newly launched products. We have incurred and may continue to incur significant costs in completing these transitions, including costs of write-downs of our products, as current or future customers transition to new products. If we do not successfully manage these product transitions, including with respect to the Revio, Onso and Vega systems and each of their related consumables, and any future long-read and short-read products, our business, operations, financial condition, and prospects may be materially and adversely affected.

Our business may be adversely affected by epidemics or other public health emergencies.

Our business could be adversely impacted by the effects of epidemics or other public health emergencies. These impacts could include, but are not necessarily limited to:

- shutdowns or business disruptions experienced by manufacturers, suppliers and other third parties with whom we conduct business;
- disruptions or interruptions to our supply chains;
- changes in applicable public health regulations that require us to modify our business practices and operations; and

- disruption to customer demand for our products.

The extent to which any epidemic or other public health emergency impacts our business and financial results inherently depends on future developments, which are highly uncertain and cannot be predicted, including new information which may emerge concerning the severity of a particular public health matter and the actions to contain it or treat its impact, among others. Even after an epidemic or public health emergency has subsided, we may continue to experience an adverse impact to our business as a result of economic aftershocks, including recessionary effects and inflationary pressures.

Significant changes to our leadership team and the resulting management transitions might harm our future operating results.

We have in recent years experienced significant changes to our leadership team, and although we believe these leadership transitions are in the best interest of our stakeholders, these transitions may result in the loss of personnel with deep institutional or technical knowledge. Further, the transition could potentially disrupt our operations and relationships with employees, suppliers, partners, and customers due to added costs, operational inefficiencies, decreased employee morale and productivity and increased turnover. We must successfully recruit and integrate our new leadership team members within our organization to achieve our operating objectives; as such, the leadership transition may temporarily affect our business performance and results of operations while the new members of our leadership team become familiar with our business. In addition, our competitors may seek to use this transition and the related potential disruptions to gain a competitive advantage over us. Furthermore, these changes may increase our dependency on the other members of our leadership team that remain with us, who are not contractually obligated to remain employed with us and may leave at any time. Any such departure could be particularly disruptive given that we are already experiencing leadership transitions and, to the extent we experience additional management turnover, competition for top management is high such that it may take some time to find a candidate that meets our requirements. Our future operating results depend substantially upon the continued service of our key personnel and in significant part upon our ability to attract and retain qualified management personnel. If we are unable to mitigate these or other similar risks, our business, results of operations and financial condition may be materially and adversely affected.

We depend on the continuing efforts of our senior management team and other key personnel. If we lose members of our senior management team or other key personnel or are unable to successfully retain, recruit and train qualified scientists, engineers, sales personnel and other employees, our ability to maintain, develop and commercialize our products could be harmed and we may be unable to achieve our goals.

Our success depends upon the continuing services of members of our senior management team and scientific and engineering personnel. In particular, our scientists and engineers are critical to our technological and product innovations, and we will need to hire additional qualified personnel. Our industry, is characterized by high demand and intense competition for talent, and the turnover rate has been and may continue to be high. Our employees can leave our company with little to no prior notice and would be free to work for a competitor. We compete for qualified management and scientific personnel with other life science companies, academic institutions and research institutions, particularly those focusing on genomics. We also compete for qualified sales personnel to support the commercialization of our existing and new products. Workforce reductions, such as the workforce reduction we implemented in 2024, and other expense reduction efforts may be negatively received by potential or current employees, and accordingly result in attrition or difficulty in recruiting desirable candidates. Additionally, we may face challenges in retaining and recruiting key personnel due to sustained declines in our stock price that could reduce the retentive value of stock options, restricted stock units and other equity awards we issue as compensation. We may not be able to provide adequate cash or other incentives to adequately counterbalance any negative perceptions about the value of our equity awards. Moreover, the value of any equity awards that we do grant to our personnel may be significantly affected by movements in our stock price that are beyond our control. The loss of qualified employees, or an inability to attract, retain, and motivate employees, could prevent us from pursuing collaborations and materially and adversely affect our support of existing products, product development and launches, business growth prospects, results of operations and financial condition.

Further, changes to U.S. immigration policies, such as such as the implementation of more restrictive interpretations by the U.S. Citizenship and Immigration Services of regulatory requirements for H-1B and other visa programs, could restrain the flow of technical and professional talent into the U.S. and may inhibit our ability to hire qualified personnel. If some of our employees' temporary work permits expire and are not renewed, we may face increased turnover rates and labor shortages, which could result in higher labor costs.

If one or more of our senior executives or other key personnel were unable or unwilling to continue in their present positions, we may not be able to replace them easily or at all, and other senior management may be required to divert attention from other aspects of the business. In addition, we do not have “key person” life insurance policies covering any member of our management team or other key personnel. The loss of any of these individuals or any inability to attract or retain qualified personnel, including scientists, engineers, sales personnel and others, could prevent us from pursuing collaborations and materially and adversely affect our support of existing products, product development and introductions, business growth prospects, results of operations and financial condition.

Our success is highly dependent on our ability to further penetrate nucleic acid sequencing applications as well as on the growth and expansion of the demand for our products. If our products fail to achieve and sustain sufficient market acceptance, we will not generate expected revenue and our business may not succeed.

Although nucleic acid sequencing technology is well-established, our SMRT Sequencing technology is relatively new and evolving. We cannot be sure that our current or future products will gain acceptance in the marketplace at levels sufficient to support our costs. Our success depends, in part, on our ability to expand overall demand for nucleic acid sequencing to include new applications that are not practicable with other current technologies and to introduce new products that capture a larger share of growing overall demand for sequencing. To accomplish this, we must successfully commercialize, and continue development of, our proprietary SMRT Sequencing technology for use in a variety of life science and other research applications, including uses by academic, government and clinical laboratories, as well as pharmaceutical, diagnostic, biotechnology, and agriculture companies, among others. However, we may be unsuccessful in these efforts and the sale and commercialization of our products may not grow sufficiently to cover our costs.

There can be no assurance that we will be successful in adding new products or securing additional customers for our current and future products. If we are unable to successfully develop acquired technologies and sell acquired technology products, we may fail to achieve our strategic commercial initiatives in connection with the planned release of new products and anticipated entry into new markets. Our ability to further penetrate existing applications and any new applications depends on a number of factors, including the cost, performance and perceived value associated with our products, as well as customers’ willingness to adopt a different approach to nucleic acid sequencing. Potential customers may have already made significant investments in other sequencing technologies and may be unwilling to invest in new technologies. We are experiencing pricing pressures caused by industry competition and increased demand for lower-priced instruments and lower operational costs. We have limited experience commercializing and selling products outside of the academic and research settings, and we cannot guarantee success in acquiring additional customers. Furthermore, we cannot guarantee that our products will be satisfactory to potential customers or that our products will perform in accordance with customer expectations.

Nucleic acid sequencing applications are new and dynamic, and there can be no assurance that they will develop as quickly as we anticipate, that they will reach their full potential or that our products will be appropriate or competitive for these applications. As a result, we may be required to refocus our marketing efforts, and we may have to make changes to the specifications of our products to enhance our ability to enter particular applications more quickly. We may also need to delay full-scale commercial deployment of new products as we develop them in order to perform quality control and early access user testing. We also need to maintain reliable supply chains for the various components in our new products and consumables to support large-scale commercial production. Even if we are able to implement our technology successfully, we and/or our sales and distribution partners may fail to achieve or sustain market acceptance of our current or future products across the full range of our intended life science and other applications. We need to continue to expand and update our internal capabilities or to collaborate with other partners, or both, in order to successfully expand sales of our products in the applications that we seek to reach, which we may be unable to do at the scale required to support our business.

If the demand for our products grows more slowly than anticipated, if we are unable to successfully scale or otherwise ensure sufficient manufacturing capacity for new products to meet demand, if we are not able to successfully market and sell our products, if competitors develop better or more cost-effective products, if our product launches and commercialization are not successful, or if we are unable to further grow our customer base or do not realize the growth with existing customers that we are expecting, our current and future sales and revenue may be materially and adversely harmed, or we may recognize an impairment loss, and our business may not succeed.

We rely on other companies for the manufacture of certain components and sub-assemblies and intend to outsource additional sub-assemblies in the future, some of which are sole sources. We may not be able to successfully scale the manufacturing process necessary to build and test multiple products on a full commercial basis, which could materially harm our business.

Our products are complex and involve a large number of unique components, many of which require precise manufacturing. The nature of our products requires customized components that are currently available only from a limited number of sources, and in some cases, single sources. We have chosen to source certain critical components from a single source, including suppliers for our SMRT Cells, reagents, and instruments. We cannot assure you that product supplies will not be limited or interrupted, especially with respect to our sole source third-party manufacturing and supply collaborators, or that product supplies will be of satisfactory quality or continue to be available at acceptable prices. In particular, any replacement of our manufacturers could require significant effort and expertise because there may be a limited number of qualified replacements. We may be unable to negotiate binding agreements with our current and future sole source third-party manufacturing and supply collaborators or, in the event that such collaborators' services become interrupted for any reason, find replacement manufacturers to support our development and commercial activities at commercially reasonable terms. We do not always have arrangements in place for a redundant or second-source supply for our sole source vendors in the event they cease to provide their products or services to us or fail to provide sufficient quantities in a timely manner. If we are required to purchase these components from alternative sources, it could take several months or longer to qualify the alternative sources. If we are unable to source these product components from sole-source third-party manufacturing and supply collaborators for any reason, including in connection with acts of terrorism, hostilities, military conflict and acts of war, including between China and Taiwan, or secure a sufficient supply of these product components on a timely basis and at an acceptable cost, or if these components do not meet our expectations or specifications for quality and functionality, our operations and manufacturing would be materially and adversely affected, we could be unable to meet customer demand and our business and results of operations may be materially and adversely affected.

The operations of our third-party manufacturing partners and suppliers have had and may in the future be disrupted by conditions unrelated to our business or operations or that are beyond our control, including but not limited to changing international trade policies, inflation, supply chain disruptions, and conditions related to epidemics or pandemics. If our manufacturing partners or suppliers are unable or fail to fulfill their obligations to us for any reason, we may not be able to manufacture our products and satisfy customer demand or our obligations under sales agreements in a timely manner, and our business could be harmed as a result. We have and may continue to face challenges in our supply chain, which has and may continue to adversely impact margins. During periods of shortage or delay, the price of components may increase or the components may not be available at all. Our suppliers have raised prices and may continue to raise prices that we may not be able to pass on to our customers, which could adversely affect our business, including our competitive position, market share, revenues, and profit margins in material ways. We may not be able to secure enough components at reasonable prices or of acceptable quality to build new products in a timely manner in the quantities or configurations needed. Various government policies have had, and may continue to have in the future, a negative impact on manufacturing and/or supply chains, in addition to customer demand for our products and demand through certain distributors. If as a result of global economic or political instability, such as the uncertainty in the Middle East, an escalation of the war in Ukraine, potential uncertainty related to Taiwan and its relationship with China, changing international trade policies, other disease outbreaks, or supply issues, we or our contractors could experience shortages, business disruptions or delays for materials sourced or manufactured in the affected countries, and their ability to supply us with instruments or product components may be affected. Occasionally, system components and reagents reach the end of their life cycles or become obsolete, requiring us to source alternatives. If we encounter delays or difficulties in securing the quality and quantity of materials we require for our products, our supply chain would be interrupted, which would adversely affect sales. If any of these events occur, our business and operating results could be harmed. Accordingly, if any of the foregoing occurs, our ability to commercialize our products, revenue and gross margins could suffer until lockdowns related to epidemics or pandemics are lifted, supply issues or business disruptions are resolved and/or other sources can be developed.

Our current manufacturing process is also characterized by long lead times between the placement of orders for and delivery of our products. If we do not accurately anticipate our needs or if we receive insufficient components to manufacture our products on a timely basis to meet customer demand, our sales and our gross margin may be adversely affected, and our business could be materially harmed. If we are unable to reduce our manufacturing costs and establish and maintain reliable, high-volume manufacturing suppliers as we scale our operations and expand our product offerings, our business, operations, financial condition, and prospects could be materially and adversely harmed.

We may be unable to consistently manufacture our instruments and consumables, including SMRT Cells and reagents, to the necessary specifications or in quantities necessary to meet demand at an acceptable cost or at an acceptable performance level.

In order to successfully generate revenue from our products, we need to supply our customers with products that meet their expectations for quality and functionality in accordance with established specifications. Our customers have experienced variability in the performance of our products. We have experienced and may continue to experience delays, quality issues or other difficulties leading to customer dissatisfaction with our products. Our production of SMRT Cells, flow cells and of reagents for both our long- and short-read technologies, involve a long and complex manufacturing process and has been and may in the future be below desired yields and resulting output levels. We have experienced and may experience in the future manufacturing delays, product defects, variability in the performance of SMRT Cells, flow cells and other products, inadequate reserves for inventory, or other issues.

There is no assurance that we will be able to manufacture our products so that they consistently achieve the product specifications and quality that our customers expect, including any products developed for clinical uses. Problems in the design or quality of our products, including low manufacturing yields of SMRT Cells, flow cells, or sub-performing reagent lots may have a material adverse effect on our brand, business, financial condition, and operating results, and could result in us losing our ISO certifications. If we were to lose our ISO certifications, then our customers might choose not to purchase products from us. There is also no assurance that we will be able to increase manufacturing yields and decrease costs, particularly if high rates of inflation continue, or that we will be successful in forecasting customer demand or manufacturing and supply costs, or that product supplies, including reagents or integrated chips, will not be limited or interrupted, or will be of satisfactory quality or continue to be available at acceptable prices. Furthermore, while we are undertaking efforts to increase our manufacturing scale and capability, we may not be able to increase manufacturing to meet anticipated demand or may experience downtime in our manufacturing facilities, including, for example, if our suppliers are unable to meet our increased demand at a time when the supply chain is under duress due to potential dislocations and disruptions in product and employee availability (whether due to pandemics, government policy or otherwise). An inability to manufacture products and components that consistently meet specifications, in necessary quantities and at commercially acceptable costs, will have a negative impact, and may have a material adverse effect on our business, product development timelines, financial condition and results of operations.

Rapidly changing technology in life sciences and research diagnostics could make our products obsolete unless we continue to develop, manufacture and commercialize new and improved products and pursue new opportunities.

Our industry is characterized by rapid and significant technological changes, frequent new product introductions and enhancements and evolving industry standards. These new and evolving technologies may be superior to, impair, or render obsolete the products we currently offer or the technologies currently underlying our products. Our future success depends on our ability to continually improve our products, to develop and introduce new products that address the evolving needs of our customers on a timely and cost-effective basis and to pursue new opportunities. These new opportunities may be outside the scope of our proven expertise or in areas where demand is unproven, and new products and services developed by us may not gain market acceptance or may not adequately perform to capture market share. Our inability to develop and introduce new products and to gain market acceptance of our existing and new products could harm our future operating results. Unanticipated difficulties or delays in replacing existing products with new products or in commercializing our existing or new products in sufficient quantities and of acceptable quality to meet customer demand, including with respect to the SMRT Cell and the Sequel, Sequel II/IIe, Revio, Onso and Vega systems, could diminish future demand for our products and may materially and adversely harm our future operating results.

The size of the markets for our products, including our Revio, Onso and Vega instruments, may be smaller than estimated, and new market opportunities may not develop as quickly as we expect, or at all, limiting our ability to successfully sell our products.

The market for sequencing systems and consumables products is evolving, making it difficult to accurately predict the size of the markets for our current and future products, including our Revio, Onso and Vega instruments. Our estimates of the total addressable market for our current and future products are based on a number of internal and third-party estimates and assumptions that may be incorrect, including the assumptions that academic, governmental, corporate, or other sources of funding will continue to be available to life sciences researchers at times and in amounts necessary to allow them to purchase our products. In addition, sales of new products may take time to develop and mature and we cannot be certain that these market opportunities will develop as we expect. While we believe our assumptions and the data underlying our estimates of the total addressable market for our products are reasonable, these assumptions and estimates may not be correct and the conditions supporting our assumptions or estimates, or those underlying the third-party data we have used, may change at any time, thereby reducing the accuracy of our estimates. As a result, our estimates of the total addressable market and growth opportunities for our products may be incorrect.

The future growth of the market for our current and future products depends on many factors beyond our control, including recognition and acceptance of our products by the research and scientific communities, the growth, prevalence and costs of competing products and solutions and the development of robust ecosystems supporting our products and their methodologies. For example, the market acceptance and growth of long-read sequencing technologies, like our Revio and Vega systems, depends on a variety of factors, including the availability and cost-effectiveness of related tools for high quality sample collection and preparation and advanced bioinformatic tools to process results; as well as the perceived advantages and disadvantages of long-read sequencing compared to short-read or other sequencing technologies: consequently, if potential customers conclude the costs of adopting long-read sequencing technologies outweigh the benefits, the market for our Revio and Vega systems may be negatively impaired. There can be no assurance that our current or future products will gain traction in the market. If the markets for our current and future products are smaller than estimated or do not develop as we expect, our growth may be limited, and it could materially and adversely affect our business, operations, financial condition and prospects.

Increased market adoption of our products by customers may depend on the availability of sample preparation and informatics tools, some of which may be developed by third parties.

Our commercial success may depend in part upon the development of sample preparation and software and informatics tools by third parties for use with our products. We cannot guarantee that product supplies, including reagents, will not be limited or interrupted, or will be of satisfactory quality or continue to be available at acceptable prices, or that third parties will develop tools that our current and future customers will find useful with our products, or that customers will adopt such third-party tools on a timely basis or at all. A lack of complementary sample preparation and informatics tools, or delayed updates of such tools, may impede the adoption of our products and may materially and adversely impact our business.

We operate in a highly competitive industry and if we are not able to compete effectively, our business and operating results will likely be harmed.

There are a significant number of companies offering nucleic acid sequencing products and/or services, including Illumina, BGI Genomics (also known as MGI or Complete Genomics), Thermo, ONT Ltd., Roche, Bionano, and Qiagen. Other companies recently entering the market include Ultima, Element and Singular. Many of these companies currently have greater name recognition, more substantial intellectual property portfolios, longer operating histories, significantly greater financial, technical, research and/or other resources, more experience in new product development, larger and more established manufacturing capabilities and marketing, sales, and support functions, and/or more established distribution channels to deliver products to customers than we do. These companies may be able to respond more quickly and effectively than we can to new or changing opportunities, technologies, standards, or customer requirements.

There are also several companies that are in the process of developing or have already developed and commercialized new, competing or potentially competing technologies, products and/or services, including ONT Ltd. and its subsidiaries, against whom we have filed complaints for patent infringement in the U.S. District Court for the District of Delaware and, previously, with the U.S. International Trade Commission, in the High Court of England and Wales and in the District Court of Mannheim, Germany. ONT Ltd. previously filed claims against us in the High Court of England and Wales and the District Court of Mannheim, Germany, also for patent infringement. Roche is developing potentially competing sequencing products. Increased competition may result in pricing pressures, which could harm our sales, profitability or market share. Our failure to further enhance our existing products and to introduce new products to compete effectively could materially and adversely affect our business, operations, financial condition, and prospects.

We may be unable to successfully increase sales of our current products or market and sell our future products.

Our ability to achieve profitability depends, in part, on our ability to attract customers for our current and future products including Revio and Onso, and we may be unable to effectively market or sell our products or find appropriate partners to do so. To perform sales, marketing, distribution, and customer support functions successfully, we face a number of risks, including:

- our ability to attract, retain and manage qualified sales, marketing, and service personnel necessary to expand market acceptance for our technologies;
- the performance and commercial availability expectations of our existing and potential customers with respect to new and existing products;
- availability of potential sales and distribution partners to sell our technologies, and our ability to attract and retain such sales and distribution partners;
- the time and cost of maintaining and growing a specialized sales, marketing and service force for a particular application, which may be difficult to justify in light of the revenue generated; and
- our sales, marketing and service force may be unable to execute successful commercial activities.

We have, and may in the future, use promotional pricing and similar measures to attract purchases of our products. These measures may not be successful in attracting purchases and, even if successful, may negatively impact our gross margins.

We have enlisted and may continue to enlist third parties to assist with sales, equipment leasing, distribution and customer support. There is no guarantee that we will be successful in attracting desirable sales and distribution partners, that we will be able to enter into arrangements with such partners on terms favorable to us or that we will be able to retain such partners on a going-forward basis. If our sales and marketing efforts, or those of any of our third-party sales and distribution partners, are not successful, or our products do not perform in accordance with customer expectations, our technologies and products may not gain market acceptance, which could materially and adversely impact our business, operations, financial condition, and prospects.

Large purchases by a limited number of customers represent a significant portion of our revenue, and any loss or delay of expected purchases has resulted, and in the future could result, in material quarter-to-quarter fluctuations of our revenue or otherwise adversely affect our results of operations.

We receive a significant portion of our revenue from a limited number of customers. For the years ended December 31, 2024, and 2023, no customer accounted for 10% or more of our total revenue. For the year ended December 31, 2022, one customer, who is our primary distributor in China, exceeded 10% of our total revenue. Many of these customers make large purchases on a purchase-order basis rather than pursuant to long-term contracts. As a consequence of the concentrated nature of our customer base and their purchasing behavior, our quarterly revenue and results of operations have fluctuated, and may fluctuate in the future, from quarter to quarter and are difficult to forecast. For example, the cancellation of orders or acceleration or delay in anticipated product purchases or the acceptance of shipped products by our larger customers has materially affected, and in the future could materially affect, our revenue and results of operations in any quarterly period. We have been, and may in the future be, unable to sustain or increase our revenue from our larger customers, or offset any discontinuation or decrease of purchases by our larger customers with purchases by new or other existing customers. To the extent one or more of our larger customers experience significant financial difficulty, bankruptcy or insolvency, this could have a material adverse effect on our sales and our ability to collect on receivables, which could materially and adversely harm our financial condition and results of operations.

In addition, many of our customers, including some of our larger customers, have negotiated, or may in the future negotiate, volume-based discounts or other more favorable terms from us or our sales and distribution partners, which can and have had a negative effect on our gross margins or revenue.

We expect that such concentrated purchases will continue to contribute materially to our revenue for the foreseeable future and that our results of operations may fluctuate materially as a result of such larger customers' buying patterns. In addition, we may see consolidation of our customer base. The loss of one of our larger customers, a significant delay or reduction in its purchases, or any volume-based discount or other more favorable terms that we or our sales and distribution partner(s) may agree to provide, in light of the aggregated purchase volume or buying power resulting from such consolidation, has harmed, and in the future could harm, our business, financial condition, results of operations and prospects.

Our products are highly complex, have recurring support requirements and could have unknown defects or errors, which may give rise to claims against us or divert application of our resources from other purposes.

Our products are highly complex and may develop or contain undetected defects or errors. Our customers have previously experienced reliability issues with our existing products, including the Sequel and Sequel II/IIe systems. In addition, it is possible our customers could experience reliability issues with current or future products, including the Sequel II/IIe, Revio, Onso and Vega systems. Despite internal and external testing, defects, or errors may arise in our products, which could result in a failure to obtain, maintain, or increase market acceptance of our products, diversion of development resources, injury to our reputation and increased warranty, service, and maintenance costs. New products, including the Revio, Onso and Vega systems, or enhancements to our existing products, including the SMRT Cell and the Sequel II/IIe systems, in particular may contain undetected errors or performance problems that are discovered only after delivery to customers. If our products have reliability or other quality issues or require unexpected levels of support in the future, the market acceptance and utilization of our products may not grow to levels sufficient to support our costs and our reputation and business could be harmed. Low utilization rates of our products has and could in the future cause our revenue and gross margins to be adversely affected. We provide a warranty for our sequencing instruments and consumables, which is generally limited to replacing, repairing, or at our option, giving credit for any sequencing instrument or consumable with defects in material or workmanship. Service contracts for our sequencing instruments may be separately purchased. Defects or errors in our products may also discourage customers from purchasing our products. The costs incurred in correcting any defects or errors may be substantial and could materially and adversely affect our operating margins. If our service and support costs increase, our business and operations may be materially and adversely affected.

In addition, such defects or errors could lead to the filing of product liability claims against us or against third parties whom we may have an obligation to indemnify against such claims, which could be costly and time-consuming to defend and result in substantial damages. Although we have product liability insurance, any product liability insurance that we have or procure in the future may not protect our business from the financial impact of a product liability claim. Moreover, we may not be able to obtain adequate insurance coverage on acceptable terms. Any insurance that we have or obtain will be subject to deductibles and coverage limits. A product liability claim could have a material adverse effect on our business, financial condition, and results of operations.

A significant portion of our sales depends on customers' spending budgets that may be subject to significant and unexpected variation which could have a negative effect on the demand for our products.

Our instruments represent significant capital expenditures for our customers in research applications. Current and potential customers for our current or future products include academic and government institutions, genome centers, medical research institutions, clinical laboratories, pharmaceutical, agricultural, biotechnology, diagnostic and chemical companies. Their spending budgets can have a significant effect on the demand for our products. Spending budgets are based on a wide variety of factors, including the allocation of available resources to make purchases, funding from government sources which is highly uncertain and subject to change, the spending priorities among various types of research equipment, policies regarding capital expenditures during economically uncertain periods and the potential impacts from health epidemics or pandemics. Any decrease in capital spending or change in spending priorities of our current and potential customers could significantly reduce the demand for our products. Any delay or reduction in purchases by current or potential customers or our inability to forecast fluctuations in demand could materially and adversely harm our future operating results.

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

Our backlog represents product orders from our customers that we have confirmed but have not been able to fulfill, and, accordingly, for which we have not yet recognized revenue. We may not receive revenue from these orders, and any 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, including the potential impacts from health epidemics or pandemics and our suppliers, especially our sole source suppliers, not being able to provide us with products or components. 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.

Our sales cycles are unpredictable and lengthy, which makes it difficult to forecast revenue and may increase the magnitude of quarterly or annual fluctuations in our operating results.

The sales cycles for our sequencing instruments are lengthy because they represent a major capital expenditure and generally require the approval of our customers' senior management. This may contribute to substantial fluctuations in our quarterly or annual operating results, particularly during periods in which our sales volume is low. Because of these fluctuations, it is likely that in some future quarters our operating results will fall below the expectations of securities analysts or investors. If that happens, the market price of our stock would likely decrease. Past fluctuations in our quarterly and annual operating results have resulted in decreases in our stock price. Such fluctuations also mean that investors may not be able to rely on our operating results in any particular period as an indication of future performance. Sales to existing customers and the establishment of a business relationship with other potential customers is a lengthy process, generally taking several months and sometimes longer. Following the establishment of the relationship, the negotiation of purchase terms can be time-consuming, including as a result of seasonal factors, as discussed below, and a potential customer may require an extended evaluation and testing period. Our sales cycles may also lengthen, and those sales cycles may result in lower units sold per cycle, as we continue to introduce our Revio and Onso instruments and their associated consumables to the market, as our customers may have additional administrative, technical or other requirements associated with transitioning to new products and technologies. In anticipation of product orders, we may incur substantial costs before the sales cycle is complete and before we receive any customer payments. As a result, if a sale is not completed or is canceled or delayed, we may have incurred substantial expenses, making it more difficult for us to become profitable or otherwise negatively impacting our financial results. Even if our selling efforts are successful, the realization of revenue may be substantially delayed, our ability to forecast our future revenue may be more limited and our revenue may fluctuate significantly from quarter to quarter and year over year. For more information on the impact of these fluctuations on our results and stock price, see "—*Our operating results fluctuate from quarter to quarter and year over year, which makes our future results difficult to predict and could negatively impact the market price of our common stock*," below.

Because some of our customers and suppliers are based in China, our business, financial condition and results of operations could be adversely affected by the political and economic tensions between the United States and China.

We are subject to risks associated with political conflicts between the U.S. and China. A portion of our revenue is generated from China. For the years ended December 31, 2024, and 2023, no customer accounted for 10% or more of our total revenue. For the year ended December 31, 2022, one customer, who is our primary distributor in China, exceeded 10% of our total revenue. In addition, certain components, some of which are critical components, of our products are manufactured in China. These components are either sourced directly from companies in China or indirectly from third parties that source from companies in China.

Consequently, we are subject to significant risks associated with the trading relationship between the U.S. and China, which is currently characterized by significant uncertainty. Tariffs imposed by the U.S. and China have increased, and may continue to increase, our costs. Additionally, export restrictions imposed by the U.S. may impact our ability to export certain products to customers or distributors in China and restrict our ability to use certain integrated circuits in our products, and it is possible that additional restrictions will be put in place that could impact our ability to provide our products to customers or distributors in China or source components from China. Moreover, the Chinese government may retaliate against U.S. trade restrictions in ways that could impact our business, including through the imposition of tariffs on imports from the U.S. and/or the imposition of export controls affecting the export of certain items from China. Given the relatively fluid regulatory environment in China and the United States and uncertainty how the U.S. or foreign governments will act with respect to export controls, tariffs, international trade agreements and policies, there could be additional import, export, tax, or other regulatory changes in the future. Any such changes could directly and adversely impact our financial results and results of operations. For more information, see "—*Enhanced trade tariffs, import restrictions, export restrictions or other trade barriers may materially harm our business*."

Other risks could include:

- interruptions to operations in China as a result of potential disease outbreaks or natural catastrophic events, which have in the past and can result in the future in business closures, transportation restrictions, import and export complications and cause shortages in the supply of raw materials or disruptions in manufacturing;
- product supply disruptions and increased costs as a result of heightened exposure to changes in the policies of the Chinese government, political unrest or unstable economic conditions in China; and
- the nationalization or other expropriation of private enterprises or intellectual property by the Chinese government.

Difficulties in this relationship may require us to take actions adverse to our business to comply with governmental restrictions on business and trade with China.

We face significant risks associated with doing business with Taiwanese suppliers and manufacturers due to the tense relationship between Taiwan and mainland China.

Substantially all of our consumable chips are partly manufactured by a company based in Taiwan. Our supply of consumables chips and other critical components may be materially and adversely affected by diplomatic, geopolitical, military and other developments affecting the relationship between China and Taiwan. Recent military exercises in the Taiwan Strait have contributed to geopolitical uncertainty regarding the future of the relationship between China and Taiwan. Current or future diplomatic, geopolitical, military or other tensions between China and Taiwan, including trade disputes, may lead to circumstances that negatively affect the availability of such consumable chips and other critical components to us, which could limit or prohibit our ability to manufacture consumable chips and other critical components or lead to an increase in our supply costs if we cannot find a similar cost alternative supplier, which could materially and adversely impact our business, operations, prospects, financial condition and results, and results of operations.

Our operating results fluctuate from quarter to quarter and year over year, which makes our future results difficult to predict and could negatively impact the market price of our common stock.

Sales of our products, particularly our sequencing instruments, are subject to significant seasonality due to several factors, including the procurement and budgeting cycles of many of our customers, especially government-funded customers, which often coincide with government fiscal year ends and significant holidays disrupting business and sales activities in key markets. These factors have contributed, and in the future may contribute, to substantial fluctuations in our quarterly operating results.

Our operating results during any given period can also be impacted by numerous other factors, including the following:

- market acceptance for our products;
- our ability to attract new customers;
- the length of our sales cycles, as discussed above;
- our ability to achieve economies of scale and other manufacturing efficiencies at the rate we anticipate;

- publications of studies by us, our competitors or third parties;
- the timing and success of new product introductions by us or our competitors or other changes in the competitive dynamics of our industry, such as consolidation;
- the amount and timing of our costs and expenses;
- changes in our pricing policies or those of our competitors;
- general economic, industry and market conditions;
- the impact of catastrophic events, including health epidemics or pandemics and military or other armed conflicts;
- the regulatory environment in which we operate;
- expenses associated with warranty obligations or unforeseen product quality issues;
- the hiring, training, and retention of key employees, including our ability to grow our sales organization;
- litigation or other claims against us for intellectual property infringement or otherwise;
- our ability to obtain additional financing as necessary; and
- changes or trends in new technologies and industry standards.

Consequently, it is possible that in some quarters our operating results will fall below the expectations of securities analysts or investors. If that happens, the market price of our common stock would likely decrease. These fluctuations, among other factors, also mean that our operating results in any particular period may not be relied upon as an indication of future performance. Additionally, any bankruptcy of a customer or other party with whom we do business, or the failure of any such party to make payments when due, or any breach or default by any such party, or the loss of any significant partnerships, could impact our revenue recognition or result in material losses to us, which may have a material adverse impact on our business. Seasonal or cyclical variations in our sales have in the past, and may in the future, become more or less pronounced over time, and have in the past materially affected, and may in the future materially affect, our business, financial condition, results of operations, and prospects.

Our ability to use net operating losses and certain other tax attributes to offset future taxable income may be subject to substantial limitations.

Under Sections 382 and 383 of the Internal Revenue Code, a corporation that undergoes an “ownership change” is subject to limitations on its ability to utilize its pre-change net operating losses (“NOLs”) and other pre-change tax attributes, such as research and development credits, to offset its post-change taxable income or tax liability. An “ownership change” is generally defined as a greater than 50% change (by value) in a corporation’s equity ownership by “5 percent shareholders” over a rolling three-year period. We believe that we have had one or more ownership changes, and as a result our existing NOLs are currently subject to limitation. Future changes in our stock ownership could result in additional ownership changes, including potentially material changes, under Sections 382 and 383. Further, California has enacted legislation that limits the use of state NOLs for tax years beginning on or after January 1, 2024 and before January 1, 2027. As a result of this legislation or other unforeseen reasons, we may not be able to utilize some or all of our NOLs even if we attain profitability.

Changes in tax law and differences in interpretation of tax laws and regulations could adversely impact our business and financial condition.

We operate in multiple jurisdictions and are subject to tax laws and regulations of the U.S. federal, state and local and non-U.S. governments. Tax laws, regulations and administrative practices in these jurisdictions may be subject to significant changes, with or without advance notice. Changes in tax laws, regulations or rulings, changes in interpretations of existing laws and regulations or changes in accounting principles could negatively and materially affect our financial position, cash flows, and results of operations.

Our facilities in California are located near earthquake faults, and the occurrence of an earthquake or other catastrophic disaster could cause damage to our facilities and equipment, which could require us to cease or curtail operations.

Our facilities in California are located near earthquake fault zones and are vulnerable to damage from earthquakes. We are also vulnerable to damage from other types of disasters, including fire, floods, power loss, communications failures and similar events. If any disaster were to occur, our ability to operate our business at our facilities would be seriously, or potentially completely, impaired. In addition, the nature of our activities could cause significant delays in our research programs and commercial activities and make it difficult for us to recover from a disaster. The insurance we maintain may not be adequate to cover our losses resulting from disasters or other business interruptions. Accordingly, an earthquake or other disaster could materially and adversely harm our ability to conduct business.

Risks Related to Our Intellectual Property

Failure to secure patent or other intellectual property protection for our products and improvements to our products may reduce our ability to maintain any technological or competitive advantage over our current and potential competitors.

Our ability to protect and enforce our intellectual property rights is uncertain and depends on complex legal and factual questions. Our ability to establish or maintain a technological or competitive advantage over our competitors may be diminished because of these uncertainties. For example:

- we or our licensors might not have been the first to make the inventions covered by each of our pending patent applications or issued patents;
- we or our licensors might not have been the first to file patent applications for these inventions;
- it is possible that neither our pending patent applications nor the pending patent applications of our licensors will result in issued patents;
- the scope of the patent protection we or our licensors obtain may not be sufficiently broad to prevent others from practicing our technologies, developing competing products, designing around our patented technologies or independently developing similar or alternative technologies;
- our and our licensors' patent applications or patents have been, are and may in the future be, subject to interference, opposition or similar administrative proceedings, which could result in those patent applications failing to issue as patents, those patents being held invalid or the scope of those patents being substantially reduced;
- our enforcement of patents and proprietary rights in other countries may be problematic or unpredictable;
- we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions;
- we or our partners may not adequately protect our trade secrets;
- we may not develop additional proprietary technologies that are patentable; or
- the patents of others may limit our freedom to operate and prevent us from commercializing our technology in accordance with our plans.

The occurrence of any of these events could impair our ability to operate without infringing upon the proprietary rights of others or prevent us from establishing or maintaining a competitive advantage over our competitors.

Variability in intellectual property laws may adversely affect our intellectual property position.

Intellectual property laws, and patent laws and regulations in particular, have been subject to significant variability either through administrative or legislative changes to such laws or regulations or changes or differences in judicial interpretation, and it is expected that such variability will continue to occur. Additionally, intellectual property laws and regulations differ by country. Variations in the patent laws and regulations or in interpretations of patent laws and regulations in the United States and other countries may diminish the value of our intellectual property and may change the impact of third-party intellectual property on us. Accordingly, we cannot predict the scope of the patents that may be granted to us with certainty, the extent to which we will be able to enforce our patents against third parties or the extent to which third parties may be able to enforce their patents against us.

Some of the intellectual property that is important to our business is owned by other companies or institutions and licensed to us, and changes to the rights we have licensed may adversely impact our business.

We license from third parties some of the intellectual property that is important to our business. If the third parties who license intellectual property to us fail to maintain the intellectual property that we have licensed, or lose rights to that intellectual property, the rights we have licensed may be reduced or eliminated, which would eliminate barriers against our competition. Termination of these licenses or reduction or elimination of our licensed rights may result in our having to negotiate new or reinstated licenses with less favorable terms, or could subject us to claims of intellectual property infringement or contract breach in litigation or other administrative proceedings that could result in damage awards against us and injunctions that could prohibit us from selling our products. In addition, some of our licenses from third parties limit the field in which we can use the licensed technology. Therefore, for us to use such licensed technology in potential future applications that are outside the licensed field of use, we may be required to negotiate new licenses with our licensors or expand our rights under our existing licenses. We cannot be certain that we will be able to obtain such licenses or expanded rights on reasonable terms or at all. In the event a dispute with our licensors were to occur, our licensors may seek to renegotiate the terms of our licenses, increase the royalty rates that we pay to obtain and maintain those licenses, limit the field or scope of the licenses, or terminate the license agreements. In addition, we have limited rights to participate in the prosecution and enforcement of the patents and patent applications that we have licensed. If we fail to meet our obligations under these licenses, or if we have a dispute regarding the terms of the licenses, these third parties could terminate the licenses, which could subject us to claims of intellectual property infringement. As a result, we cannot be certain that these patents and applications will be prosecuted and enforced in a manner consistent with the best interests of our business. Further, because of the rapid pace of technological change in our industry, we may need to rely on key technologies developed or licensed by third parties, and we may not be able to obtain licenses and technologies from these third parties at all or on reasonable terms. The occurrence of these events may have a material adverse effect on our business, financial condition or results of operations.

The measures that we use to protect the security of and enforce our intellectual property and other proprietary rights may not be adequate, which could result in the loss of legal protection for, and thereby diminish the value of, such intellectual property and other rights.

In addition to patents, we also rely upon trademarks, trade secrets, copyrights, and unfair competition laws, as well as license agreements and other contractual provisions, to protect our intellectual property and other proprietary rights. Despite these measures, any of our intellectual property rights could be challenged, invalidated, circumvented, or misappropriated. In addition, we attempt to protect our intellectual property and proprietary information by requiring our employees and consultants to enter into confidentiality and assignment of inventions agreements, and by entering into confidentiality agreements with our third-party development, manufacturing, sales, and distribution partners, who may also acquire, develop and/or commercialize alternative or competing products or provide services to our competitors. For example, Roche had certain access to our trade secrets and other proprietary information pursuant to an agreement we had entered into with Roche, subject to the confidentiality provisions thereof (certain of which provisions survive the termination of the agreement); however, Roche is developing potentially competing sequencing products. There can be no assurance that our measures have provided or will provide adequate protection for our intellectual property and proprietary information. These agreements may be breached, and we may not have adequate remedies for any such breach. In addition, our trade secrets and other proprietary information may be disclosed to others, or others may gain access to or disclose our trade secrets and other proprietary information. Enforcing a claim that a third party illegally obtained and is using our trade secrets is expensive and time consuming, and the outcome is unpredictable. Additionally, others may independently develop proprietary information and techniques that are substantially equivalent to ours. The occurrence of these events may have a material adverse effect on our business, financial condition, or results of operations.

Our intellectual property may be subject to challenges in the United States or foreign jurisdictions that could adversely affect our intellectual property position.

Our pending, issued and granted U.S. and foreign patents and patent applications have been, are and may in the future be, subject to challenges by ONT Ltd., Oxford Nanopore Technologies, Inc. ("ONT Inc.") and Metrichor, Ltd. (“Metrichor” and, together with ONT Ltd. and ONT Inc., “ONT”) in addition to other parties asserting prior invention by others or invalidity on various grounds, through proceedings, such as interferences, reexaminations, or opposition proceedings. Addressing these challenges to our intellectual property has been, and any future challenges can be, costly and distract management’s attention and resources. For example, we previously incurred significant legal expenses to litigate and settle a complaint seeking review of a patent interference decision of the U.S. Patent and Trademark Office. Additionally, ONT previously requested that the U.S. Patent and Trademark Office institute *inter partes* reviews of certain patents that we have asserted against ONT Inc. and ONT Ltd. in litigation proceedings for patent infringement. While none of the *inter partes* reviews requested by ONT were instituted by the U.S. Patent and Trademark Office, challenges of this nature before the Patent Trial and Appeal Board (“PTAB”) in the future could result in determinations that our patents or pending patent applications are unpatentable to us, or are invalidated or unenforceable in whole or in part and could require us to expend significant time, funds, and other resources in litigating such challenges. Accordingly, adverse rulings in such proceedings could negatively impact the scope of our intellectual property protection for our products and technology and could materially and adversely affect our business. Similar mechanisms for challenging the validity and enforceability of a patent exist in foreign patent offices and courts and may result in the revocation, cancellation, or amendment of any foreign patents we hold now or in the future. The outcome following legal assertions of invalidity and unenforceability is unpredictable, and prior art could render our patents invalid. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on such products. Such a loss of patent protection would have a material adverse impact on our business.

Some of our technology is subject to "march-in" rights by the U.S. government.

Some of our patented technology was developed with U.S. federal government funding. When new technologies are developed with U.S. government funding, the government obtains certain rights in any resulting patents, including a nonexclusive license authorizing the government to use the invention for non-commercial purposes. These rights may permit the government to disclose our confidential information to third parties and to exercise "march-in" rights to use or allow third parties to use our patented technology. The government can exercise its march-in rights if it determines that such action is necessary to (i) achieve practical application of the U.S. government-funded technology, (ii) alleviate health or safety needs, (iii) meet requirements of federal regulations, or (iv) give preference to U.S. industry. In addition, U.S. government-funded inventions must be reported to the government and such government funding must be disclosed in any resulting patent applications. Furthermore, our rights in such inventions are subject to government license rights and foreign manufacturing restrictions. The U.S. government has generally denied requests to exercise its march-in rights, even to provide access to potentially life-saving medications; however, if the U.S. government were to exercise its march-in rights to our patent technologies funded by the U.S. government, particularly for the benefit of one of more of our competitors, that may have a material adverse effect on our business.

We are involved in legal proceedings to enforce our intellectual property rights.

Our intellectual property rights involve complex factual, scientific, and legal questions. We operate in an industry characterized by significant intellectual property litigation. Even though we may believe that we have a valid patent on a particular technology, other companies have from time to time taken, and may in the future take, actions that we believe violate our patent rights. For example, we were previously involved in legal proceedings with ONT and Harvard University in several United States and European jurisdictions. We have in the past received adverse rulings against us with respect to our complaint with the United States International Trade Commission for one of these proceedings. Legal actions to enforce our patent rights have been, and will continue to be, expensive, and may divert significant management time and resources. Adverse parties from previous legal actions have brought, and they and others may in the future bring, claims against us and/or our intellectual property. Litigation is a significant ongoing expense, recognized in sales, general and administrative expense, with an uncertain outcome, and has been, and may in the future be, a material expense for us. Our enforcement actions may not be successful, have given rise to legal claims against us and could result in some of our intellectual property rights being determined to be invalid or not enforceable. Furthermore, an adverse determination or judgement could lead to an award of damages against us, or the issuance of an injunction against us or our products that could prevent us from selling any products found to be infringing the intellectual property rights of another party.

We have been, are currently, and could in the future be, subject to legal proceedings with third parties who may claim that our products infringe or misappropriate their intellectual property rights.

Our products are based on complex, rapidly developing technologies. We may not be aware of issued or previously filed patent applications that belong to third parties that mature into issued patents that cover some aspect of our products or their use. In addition, because patent litigation is complex and the outcome inherently uncertain, our belief that our products do not infringe third-party patents of which we are aware or that such third-party patents are invalid and unenforceable may be determined to be incorrect. As a result, third parties have claimed, and may in the future claim, that we infringe their patent rights and have filed, and may in the future file lawsuits or engage in other proceedings against us to enforce their patent rights. For example, we are involved in legal proceedings for alleged patent infringement and related matters in the United States with Personal Genomics of Taiwan, Inc. ("PGI"), Take2 Technologies, Ltd., and the Chinese University of Hong Kong. In addition, ONT Ltd. and Harvard University have, in the past, filed claims against us in the High Court of England and Wales and the District Court of Mannheim, Germany for patent infringement, and PGI has filed claims against us in the U.S. District Court for the District of Delaware and in the Wuhan People's Court in China. We are aware of other issued patents and patent applications owned by third parties that could be construed to read on our products, and related maintenance and support services. Although we do not believe that our products or services infringe any valid issued patents, the third-party owners of these patents and applications may in the future claim that we infringe their patent rights and file lawsuits against us. In addition, as we enter new markets, our competitors and other third parties may claim that our products infringe their intellectual property rights as part of a business strategy to impede our successful entry into those markets. Furthermore, parties making claims against us may be able to obtain injunctive or other relief, which effectively could block our ability to further develop or commercialize products or services and could result in the award of substantial damages against us. Patent litigation between competitors in our industry is common. Additionally, we have certain obligations to many of our customers and suppliers to indemnify and defend them against claims by third parties that our products or their use infringe any intellectual property of these third parties. In defending ourselves against any of these claims, we have in the past incurred, and could in the future incur, to defend ourselves or our customers, substantial costs, and the attention of our management and technical personnel could be diverted. For example, we previously incurred significant legal expenses to litigate and settle a complaint alleging patent infringement. Even if we have an agreement that indemnifies us against such costs, the indemnifying party may be unable to uphold its contractual obligations. To avoid or settle legal claims, it may be necessary or desirable in the future to obtain licenses relating to one or more products or relating to current or future technologies, which could negatively affect our gross margins. We may not be able to obtain these licenses on commercially reasonable terms, or at all. We may be unable to modify our products so that they do not infringe the intellectual property rights of third parties. In some situations, the results of litigation or settlement of claims may require us to cease allegedly infringing activities which could prevent us from selling some or all of our products. The occurrence of these events may have a material adverse effect on our business, financial condition, or results of operations.

In addition, in the course of our business, we may from time to time have access or be alleged to have access to confidential or proprietary information of others, which, though not patented, may be protected as trade secrets. Others could bring claims against us asserting that we improperly used their confidential or proprietary information, or that we misappropriated their technologies and incorporated those technologies into our products. A determination that we illegally used the confidential or proprietary information or misappropriated technologies of others in our products could result in us paying substantial damage awards or being prevented from further developing or selling some or all of our products, which could materially and adversely affect our business.

We have not yet registered some of our trademarks in all of our potential markets, and failure to secure those registrations could adversely affect our business.

Some of our trademark applications may not be allowed for registration, and our registered trademarks may not be maintained or enforced. In addition, in the U.S. Patent and Trademark Office and in comparable agencies in many foreign jurisdictions, third parties are given an opportunity to oppose pending trademark applications and to seek to cancel registered trademarks. Opposition or cancellation proceedings may be filed against our trademarks, and our trademarks may not survive such proceedings.

Our use of "open source" software could adversely affect our ability to sell our products and subject us to possible litigation.

A portion of the products or technologies developed and/or distributed by us incorporate "open source" software, and we may incorporate open source software into other products or technologies in the future. Some open source software licenses require that we disclose the source code for any modifications to such open source software that we make and distribute to one or more third parties, and that we license the source code for such modifications to third parties, including our competitors, at no cost. We monitor the use of open source software in our products to avoid uses in a manner that would require us to disclose or grant licenses under our source code that we wish to maintain as proprietary; however, there can be no assurance that such efforts have been or will be successful. In some circumstances, distribution of our software that includes or is linked with open source software could require that we disclose and license some or all of our proprietary source code in that software, which could include permitting the use of such software and source code at no cost to the user. Open source license terms are often ambiguous and there is little legal precedent governing the interpretation of these licenses. Successful claims made by the licensors of open source software that we have violated the terms of these licenses could result in unanticipated obligations, including being subject to significant damages, being enjoined from distributing products that incorporate open source software and being required to make available our proprietary source code pursuant to an open source license, which could substantially help our competitors develop products that are similar to or better than ours or otherwise materially and adversely affect our business.

Risks Related to Regulation

We are, and may become, subject to governmental regulations that may impose burdens on our operations, and the markets for our products may be narrowed.

We are subject, both directly and indirectly, to the adverse impact of government regulation of our operations and markets. For example, export of our instruments may be subject to strict regulatory control in a number of jurisdictions, and we could experience disruption in our supply chain as a result of certain geopolitical events and conflicts and any related political or economic responses and counter-responses or otherwise by various global actors. On January 15, 2025, the United States Department of Commerce's Bureau of Industry and Security ("BIS") issued an Interim Final Rule ("IFR") implementing targeted export controls on certain analytical instruments that are highly suitable for generating large, detailed biological datasets based upon the potential to exploit these techniques for asymmetric military advantage. While the Company's products would not be included under the current IFR, future BIS or other government regulations could potentially apply to our products and/or negatively impact our ability to export those products to certain countries and markets. Additionally, restrictions on the ability to send certain products and technology related to semiconductors, semiconductor manufacturing, and supercomputing to China continue to increase in both product and country scope and may impact our ability to provide products to customers or distributors worldwide. We have expanded and are continuing to expand the international jurisdictions into which we supply products, which increases the risks surrounding governmental regulations relating to our business. The need to or failure to satisfy export control criteria or to obtain necessary clearances could delay or prevent shipment of products, which could materially and adversely affect our revenue and profitability. Moreover, the life sciences industry, which is expected to continue to be one of the primary markets for our technology, has historically been heavily regulated. There are, for example, laws in several jurisdictions restricting research in genetic engineering, which may narrow our markets. Given the evolving nature of this industry, legislative bodies or regulatory authorities may adopt additional regulations that may adversely affect our market opportunities. Additionally, if ethical and other concerns surrounding the use of genetic information, diagnostics or therapies become widespread, there may be less demand for our products.

Our business is also directly affected by a wide variety of government regulations applicable to business enterprises generally and to companies operating in the life science industry in particular. Failure to comply with government regulations or obtain or maintain necessary permits and licenses could result in a variety of fines or other censures or an interruption in our business operations which may have a negative impact on our ability to generate revenue and the cost of operating our business. In addition, changes to laws and government regulations could cause a material adverse effect on our business as we will need to adapt our business to comply with such changes. For example, a governmental prohibition on the use of human *in vitro* diagnostics or other regulations that negatively impact the research and development activities of our customers would adversely impact our commercialization of products on which we have expended significant research and development resources, which would in turn have a material adverse impact on our business and prospects.

Our products could become subject to government regulation as medical devices by the U.S. Food and Drug Administration or other domestic and international regulatory agencies even if we do not elect to seek regulatory clearance or approval to market our products for diagnostic purposes, which could increase our costs and impede or delay our commercialization efforts, thereby materially and adversely affecting our business and results of operations.

Our products are currently labeled and promoted as research use only ("RUO") products and are not currently designed, or intended to be used, for clinical diagnostic tests or as medical devices. However, in the future, certain of our products or related applications, such as those that may be developed for clinical uses, could be subject to regulation by the FDA, or the FDA's regulatory jurisdiction could be expanded to include our products. Also, even if our products are labeled, promoted, and intended as RUO, the FDA or comparable agencies of other countries could disagree with our conclusion that our products are intended for research use only or deem our sales, marketing and promotional efforts as being inconsistent with the FDA's guidance on RUO products. For example, our customers may independently elect to use our RUO labeled products in their own LDTs for clinical diagnostic use, which could subject our products to government regulation, and the regulatory clearance or approval and maintenance process for such products may be uncertain, expensive, and time-consuming.

In particular, in 2013, the FDA issued Final Guidance "Distribution of In Vitro Diagnostic Products Labeled for Research Use Only." The guidance emphasizes that the FDA will review the totality of the circumstances when it comes to evaluating whether equipment and testing components are properly labeled as RUO. The final guidance states that merely including a labeling statement that the product is for research purposes only will not necessarily render the device exempt from the FDA's clearance, approval, and other regulatory requirements if the circumstances surrounding the distribution, marketing and promotional practices indicate that the manufacturer knows its products are, or intends for its products to be, used for clinical diagnostic purposes. These circumstances may include written or verbal sales and marketing claims or links to articles regarding a product's performance in clinical applications and a manufacturer's provision of technical support for clinical applications.

Regulatory requirements related to marketing, selling, and distribution of RUO products could change or be uncertain, even if clinical uses of our RUO products by our customers were done 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. In the event that we fail to obtain and maintain necessary regulatory clearances or approvals for products that we develop for clinical uses, or if clearances or approvals for future products and indications are delayed or not issued, our commercial operations may be materially harmed. Furthermore, even if we are granted regulatory clearances or approvals, they may include significant limitations on the indicated uses for the product, which may limit the market for the product. We do not have experience in obtaining FDA approvals and no assurance can be given that we will be able to obtain or to maintain such approvals. Furthermore, any approvals that we may obtain can be revoked if safety or efficacy problems develop.

The FDA has historically exercised enforcement discretion in not enforcing the medical device regulations against laboratories developing and offering LDTs. In May 2024, the FDA issued a final rule that phases out its enforcement discretion for LDTs, unless exempt, and amends the FDA's regulations to make explicit that in vitro diagnostics are medical devices under the FDCA, including when the manufacturer of the diagnostic product is a laboratory. The American Clinical Laboratory Association and a private laboratory have initiated litigation against the agency to challenge the implementation of this final rule. We will continue to evaluate the impact of this final rule, this litigation, as well as any future lawsuits brought against the FDA, and future legislative and administration actions on our business. Further, the U.S. Supreme Court recently overruled the *Chevron* doctrine, which gave deference to regulatory agencies' statutory interpretations in litigation against federal government agencies, such as the FDA, where the law is ambiguous. This landmark Supreme Court decision may invite various stakeholders to bring lawsuits against the FDA to challenge longstanding decisions of the FDA, which could undermine the FDA's authority and lead to uncertainties in the industry. We cannot predict the full impact of this decision on our business or that of our customers.

Future legislative or administrative actions can impact the sales of our products and how customers use our products, and may require us to change our business model in order to maintain compliance with applicable laws. 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. Further, sales of devices for diagnostic purposes may subject us to additional healthcare regulation and enforcement by the applicable government agencies. Such laws include, without limitation, state and federal anti-kickback or anti-referral laws, healthcare fraud and abuse laws, false claims laws, privacy and security laws, Physician Payments Sunshine Act and related transparency and manufacturer reporting laws, and other laws and regulations applicable to medical device manufacturers.

If the FDA determines our products or related applications should be subject to additional regulation as in vitro diagnostic devices based upon customers' use of our products for clinical diagnostic or therapeutic decision-making purposes, our ability to market and sell our products could be impeded and our business, prospects, results of operations and financial condition may be adversely affected. In addition, the FDA could consider our products to be misbranded or adulterated under the FDCA and subject to recall and/or other enforcement action.

To the extent we elect to label and promote any of our products as medical devices, we would be required to obtain prior approval or clearance by the FDA or comparable foreign regulatory authority, which could take significant time and expense and could fail to result in a marketing authorization for the intended uses we believe are commercially attractive. Obtaining marketing authorization in one jurisdiction does not mean that we will be successful in obtaining marketing authorization in other jurisdictions where we conduct business.

If we elect to label and market our products for use as, or in the performance of, clinical diagnostics in the United States, thereby subjecting them to FDA regulation as medical devices, we would be required to obtain pre-market 510(k) clearance or pre-market approval from the FDA, unless an exception applies. It is possible, in the event we elect to submit 510(k) applications for certain of our products, that the FDA would take the position that a more burdensome pre-market application, such as a PMA or a *de novo* application is required for some of our products. If such applications were required, greater time and investment would be required to obtain FDA approval. Even if the FDA agreed that a 510(k) was appropriate, FDA clearance can be expensive and time consuming. It generally takes a significant amount of time to prepare a 510(k), including conducting appropriate testing on our products, and several months to years for the FDA to review a submission. Notwithstanding the effort and expense, FDA clearance or approval could be denied for some or all of our products for which we choose to market as a medical device or a clinical diagnostic device. Even if we were to seek and obtain regulatory approval or clearance, it may not be for the intended uses we request or that we believe are important or commercially attractive. There can be no assurance that future products for which we may seek pre-market clearance or approval will be approved or cleared by FDA or a comparable foreign regulatory authority on a timely basis, if at all, nor can there be assurance that labeling claims will be consistent with our anticipated claims or adequate to support continued adoption of such products. Compliance with FDA or comparable foreign regulatory authority regulations will require substantial costs, and subject us to heightened scrutiny by regulators and substantial penalties for failure to comply with such requirements or the inability to market our products. The lengthy and unpredictable pre-market clearance or approval process, as well as the unpredictability of the results of any required clinical studies, may result in our failing to obtain regulatory clearance or approval to market such products, which would significantly harm our business, results of operations, reputation, and prospects.

If we sought and received regulatory clearance or approval for certain of our products, we would be subject to ongoing FDA obligations and continued regulatory oversight and review, including the general controls listed above and the FDA's QSRs for our development and manufacturing operations. In addition, we would be required to obtain a new 510(k) clearance before we could introduce subsequent material modifications or improvements to such products. We could also be subject to additional FDA post-marketing obligations for such products, any or all of which would increase our costs and divert resources away from other projects. If we sought and received regulatory clearance or approval and are not able to maintain regulatory compliance with applicable laws, we could be prohibited from marketing our products for use as, or in the performance of, clinical diagnostics and/or could be subject to enforcement actions, including warning letters and adverse publicity, fines, injunctions, and civil penalties; recall or seizure of products; operating restrictions; and criminal prosecution.

Further, if we decide to seek regulatory clearance or approval for certain of our products in countries outside of the United States or if a foreign regulatory authority determines that our products are regulated as medical devices, we would be subject to extensive medical device laws and regulations outside of the United States. Sales of such products outside the United States will likely be subject to foreign regulatory requirements, which can vary greatly from country to country. As a result, the time required to obtain clearances or approvals outside the United States may differ from that required to obtain FDA clearance or approval and we may not be able to obtain foreign regulatory approvals on a timely basis or at all. In Europe, we would need to comply with the Medical Device Regulation 2017/745 and In Vitro Diagnostic Regulation 2017/746, which could make obtaining regulatory approvals in Europe more challenging. In addition, the FDA regulates exports of medical devices. The number and scope of these requirements are increasing. Unlike many of the other companies offering nucleic acid sequencing equipment or consumables, this is an area where we do not have expertise. We, or our other third-party sales and distribution partners, may not be able to obtain regulatory approvals in such countries or may incur significant costs in obtaining or maintaining our foreign regulatory approvals. In addition, the export by us of certain of our products, which have not yet been cleared for domestic commercial distribution, may be subject to FDA or other export restrictions. Failure to comply with these regulatory requirements or obtain and maintain required approvals, clearances and certifications could impair our ability to commercialize our products for diagnostic use outside of the United States. Any action brought against us for violations of these laws or regulations, even if successfully defended, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business.

Enhanced trade tariffs, import restrictions, export restrictions, or other trade barriers may materially harm our business.

We are continuing to expand our international operations as part of our growth strategy and have experienced an increasing concentration of sales in certain regions outside the United States, especially the Asia-Pacific region, as discussed above. There is currently significant uncertainty about the future relationship between the United States and various other countries, most significantly China, with respect to trade policies, treaties, government regulations and tariffs. Starting in September 2018, the U.S. Trade Representative (the "USTR") enacted various tariffs ranging from 7.5% to 25% on the import of Chinese products, including non-U.S. components and materials that may be used in our products. Since that time, USTR has enacted further tariff increases on certain Chinese products, in some instances raising the additional tariffs on these projects to up to 100%. In February 2025, the U.S. government also enacted an additional 10% ad valorem tariff on almost all imports of Chinese-origin goods, and in March 2025, this tariff was further escalated to 20% ad valorem. Additionally, China also has imposed tariffs on imports into China from the United States. These tariffs have and could continue to raise our costs. Furthermore, tariffs, trade restrictions, or trade barriers that have been, and may in the future be, placed on products such as ours by foreign governments, especially China, have raised, and could further raise, amounts paid for some or all of our products, which may result in the loss of customers and our business, and our financial condition and results of operations may be harmed. In February 2025, the Trump Administration also announced new 25% tariffs on imports from Canada and Mexico, which were temporarily suspended subject to further negotiations, and partially implemented with respect to goods not eligible for duty-free import under the U.S.-Mexico-Canada Agreement as of March 2025. U.S. tariffs of 25% have also been implemented on a wider array of imported steel and aluminum items as of March 2025. Additional tariffs on a wider range of countries may be forthcoming. Further tariffs may be imposed that could cover imports of additional components and materials used in our products, including for example semiconductor chips, or our business may be adversely impacted by retaliatory trade measures taken by China, Canada, the EU, or other countries, including restricted access to components or materials used in our products or increased amounts that must be paid for our products, which could materially harm our business, financial condition, and results of operations. We may be unable to make changes in our supply chain quickly enough to avoid the impact of new or potential tariffs. Uncertainty regarding the scope and amount of potential additional tariffs may also result in disruptions in our supply chain, particularly if such changes in applicable or potential tariffs makes current or planned production unprofitable.

Additionally, the U.S. government has continued to increase controls imposed in 2022 restricting the ability to send certain products and technology related to semiconductors, semiconductor manufacturing, and supercomputing. In 2023 and 2024, the U.S. government expanded the list of advanced integrated circuits subject to heightened export controls, including certain hardware containing these specified integrated circuits, expanded the list of destinations requiring export authorization for such items, and added new restrictions based on the headquarters location of the parties involved. As of May 2025, regulations would further expand the controls to impose a worldwide licensing requirement. In many cases, these licenses are subject to a policy of denial and will not be issued. These existing and future controls may impact our ability to export certain products to customers or distributors in China or other locations and restrict our ability to use certain integrated circuits in our products. The U.S. government also continues to add additional entities in China and other countries to restricted party lists impacting the ability of U.S. companies to provide items to these entities. Moreover, in November 2018, the U.S. Commerce Department's Bureau of Industry and Security ("BIS") released an advance notice of proposed rulemaking to control the export of emerging technologies. This notice included "[b]iotechnology, including nanobiology; synthetic biology; genomic and genetic engineering; or neurotech" as possible areas of increased export controls. Since 2018, the U.S. government has continued to provide updated lists of emerging technologies subject to national security consents. These lists continue to include biotechnologies including "[g]enome and protein engineering including design tools" and "[b]iomanufacturing and bioprocessing technologies." Therefore, it is possible that our ability to export our products to customers or distributors may be further restricted in the future. For example, on January 15, 2025, BIS issued an IFR implementing targeted export controls on certain analytical instruments that are highly suitable for generating large, detailed biological datasets based upon the potential to exploit these techniques for asymmetric military advantage. While the Company's products would not be included under the current IFR, future BIS or other government regulations could potentially apply to our products and/or negatively impact our ability to export those products to certain countries and markets.

The Chinese government has introduced retaliatory measures in response to existing or future U.S. export controls, tariffs and other trade restrictions and it is possible that the Chinese or U.S. governments will implement additional retaliatory measures which could impact our business. For example, in December 2024, China announced a new export control regime that includes stringent export controls on exports of germanium and gallium, and in February 2025 implemented additional export controls regulating the export of resources including tungsten, tellurium, bismuth, indium, and molybdenum. It also is possible that additional restrictions will be put in place that could impact our ability to provide our products to customers or distributors in China or source components from China. The continued threats of tariffs, trade restrictions and trade barriers could have a generally disruptive impact on the global economy and, therefore, negatively impact our sales. Given the relatively fluid regulatory environment in China and the United States and uncertainty how the U.S. or foreign governments will act with respect to export controls, tariffs, international trade agreements and policies, there could be additional tax or other regulatory changes in the future. Any such changes could directly and adversely impact our financial results and results of operations.

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

Engaging in international business inherently involves a number of difficulties and risks, including:

- required compliance with existing and changing foreign regulatory requirements and laws that are or may be applicable to our business in the future, such as the European Union's General Data Protection Regulation ("GDPR"), the UK General Data Protection Regulation and other data privacy requirements, labor and employment regulations, anti-competition regulations, the U.K. Bribery Act of 2010 and other anti-corruption laws, regulations relating to the use of certain hazardous substances or chemicals in commercial products, and require the collection, reuse, and recycling of waste from products we manufacture;
- required compliance with U.S. laws such as the Foreign Corrupt Practices Act, and other U.S. federal laws and trade and economic sanctions and other regulations established by the Office of Foreign Asset Control;
- export requirements and import or trade restrictions;
- laws and business practices favoring local companies;
- restrictions on both inbound and outbound cross-border investment;

- foreign currency exchange, longer payment cycles and difficulties in enforcing agreements and collecting receivables through certain foreign legal systems;
- changes in social, economic, and political conditions or in laws, regulations and policies governing foreign trade, manufacturing, research and development, and investment both domestically as well as in the other countries and jurisdictions in which we operate and into which we may sell our products including as a result of ongoing geopolitical tensions related to the political uncertainty and military actions associated with the war in Ukraine, resulting sanctions imposed by the U.S. and other countries, and retaliatory actions taken by Russia in response to such sanctions;
- potentially adverse tax consequences, tariffs, customs charges, bureaucratic requirements, and other trade barriers;
- difficulties and costs of staffing and managing foreign operations; and
- difficulties protecting, maintaining, enforcing, or procuring intellectual property rights and defending against intellectual property claims under the law and judicial systems of other countries.

If one or more of these risks occurs, it could require us to dedicate significant resources to remedy such occurrence, and if we are unsuccessful in finding a solution, our financial results will suffer.

Our operations involve the use of hazardous materials, and we must comply with environmental, health and safety laws, which can be expensive and may adversely affect our business, operating results and financial condition.

Our research and development and manufacturing activities involve the use of hazardous materials, including chemicals and biological materials, and some of our products include hazardous materials. Accordingly, we are subject to federal, state, local and foreign laws, regulations, and permits relating to environmental, health and safety matters, including, among others, those governing the use, storage, handling, exposure to and disposal of hazardous materials and wastes, the health and safety of our employees, and the shipment, labeling, collection, recycling, treatment, and disposal of products containing hazardous materials. Liability under environmental laws and regulations can be joint and several and without regard to fault or negligence. For example, under certain circumstances and under certain environmental laws, we could be held liable for costs relating to contamination at our or our predecessors' past or present facilities and at third-party waste disposal sites. We could also be held liable for damages arising out of human exposure to hazardous materials. There can be no assurance that violations of environmental, health and safety laws will not occur as a result of human error, accident, equipment failure or other causes. The failure to comply with past, present or future laws could result in the imposition of substantial fines and penalties, remediation costs, property damage and personal injury claims, investigations, the suspension of production or product sales, loss of permits or a cessation of operations. Any of these events could harm our business, operating results, and financial condition. We also expect that our operations will be affected by new environmental, health and safety laws and regulations on an ongoing basis, or more stringent enforcement of existing laws and regulations. New laws or changes to existing laws may result in additional costs and may increase penalties associated with violations or require us to change the content of our products or how we manufacture them, which could have a material adverse effect on our business, operating results, and financial condition.

Ethical, legal, privacy, data protection and social concerns or governmental restrictions surrounding the use of genetic information could reduce demand for our technology.

Our products may be used to provide genetic information about humans, agricultural crops and other living organisms. The information obtained from our products could be used in a variety of applications which may have underlying ethical, legal, privacy, data protection and social concerns, including the genetic engineering or modification of agricultural products or testing for genetic predisposition for certain medical conditions. Governmental authorities could, for safety, social or other purposes, call for limits on or regulation of the use of genetic testing, and may consider or adopt such regulations or other restrictions. Such concerns or governmental restrictions could limit the use of our products or be costly and burdensome to comply with, and actual or perceived violations of any such restrictions may lead to the imposition of substantial fines and penalties, remediation costs, claims and litigation, regulatory investigations and proceedings, and other liability, any of which could have a material adverse effect on our business, financial condition, and results of operations.

Regulations related to conflict minerals has caused us to incur, and will continue to cause us to incur, additional expenses and could limit the supply and increase the costs of certain materials used in the manufacture of our products.

We are subject to requirements under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 that require us to conduct diligence and report on whether or not our products contain conflict minerals. These requirements could adversely affect the sourcing, availability and pricing of the materials used in the manufacture of components used in our products. Furthermore, the complex nature of our products requires components and materials that may be available only from a limited number of sources and, in some cases, from only a single source. We have incurred, and will continue to incur, additional costs to comply with the disclosure requirements, including costs related to conducting diligence procedures to determine the sources of conflict minerals that may be used or necessary to the production of our products and, if applicable, potential changes to components, processes, or sources of supply as a consequence of such verification activities. We may face reputational harm if we determine that certain of our products contain minerals that are not determined to be conflict free or if we are unable to alter our processes or sources of supply to avoid using such materials. In such circumstances, the reputational harm could materially and adversely affect our business, financial condition, or results of operations.

Risks Related to Owning Our Common Stock

The price of our common stock has been, is, and may continue to be, highly volatile, and you may be unable to sell your shares at or above the price you paid to acquire them.

The market price of our common stock is highly volatile, and we expect it to continue to be volatile for the foreseeable future in response to many risk factors listed in this section, and others beyond our control, including:

- actual or anticipated fluctuations in our financial condition and operating results;
- announcements of new products, technological innovations or strategic partnerships by us or our competitors;
- announcements by us, our customers, partners, or suppliers relating directly or indirectly to our products, services or technologies;
- overall conditions in our industry and market;
- addition or loss of significant customers;
- changes in laws or regulations applicable to our products;
- actual or anticipated changes in our growth rate relative to our competitors;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, capital commitments or achievement of significant milestones;
- additions or departures of key personnel;
- competition from existing products or new products that may emerge;
- issuance of new or updated research or reports by securities analysts;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- disputes or other developments related to proprietary rights, including patents, litigation matters or our ability to obtain intellectual property protection for our technologies;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us or our stockholders;
- stock price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- reports, guidance and ratings issued by securities or industry analysts;
- operating results below the expectations of securities analysts or investors; and

- general economic and market conditions, which could be impacted by various events including health epidemics or pandemics, interest rate fluctuations, increases in fuel prices, foreign currency fluctuations, changing international trade policies, acts of terrorism, hostilities or the perception that hostilities may be imminent, military conflict and acts of war, including further political uncertainty and military actions associated with the war in Ukraine and the related response, including sanctions or other restrictive actions, by the United States and/or other countries.

If any of the forgoing occurs, it would cause our stock price or trading volume to decline. Stock markets in general and the market for companies in our industry in particular have experienced price and volume fluctuations; these fluctuations have been, and may continue to be, exacerbated by current macroeconomic trends and geopolitical events. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. These broad market and industry fluctuations, as well as general economic, political and market conditions such as recessions, interest rate changes or international currency fluctuations, may negatively impact the market price of our common stock. You may not realize any return on your investment in us and may lose some or all of your investment. In the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation. We have been a party to this type of litigation in the past and may be the target of this type of litigation again in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

Sales of substantial amounts of our common stock in the public markets, or the perception that such sales might occur, could reduce the market price that our common stock might otherwise attain and may dilute your voting power and your ownership interest in us.

Sales of a substantial number of shares of our common stock in the public market, or the perception that such sales could occur, could adversely affect the market price of our common stock and may make it more difficult for existing stockholders to sell their common stock at a time and price that they deem appropriate and may dilute their voting power and ownership interest in us.

In addition, if our stockholders sell, or indicate an intent to sell, a large number of shares of our common stock in the public market, it could cause our stock price to fall, particularly if such sales occur over a short period of time (for example, following delivery of shares upon achievement of milestones in our acquisition agreements). We may also issue shares of common stock or securities convertible into our common stock in connection with a financing, acquisition, our equity incentive plans, or otherwise. Any such issuances would result in dilution to our existing stockholders and the market price of our common stock may be adversely affected.

Concentration of ownership by our principal stockholders may result in control by such stockholders of the composition of our board of directors.

Our existing principal stockholders, holders of Notes, executive officers, directors, and their affiliates beneficially own, or following conversion of the Notes could own, a significant number of our outstanding shares of common stock. In addition, such parties may acquire additional control by purchasing stock that we issue in connection with our future fundraising efforts. These parties may now and in the future be able to exercise a significant level of control over all matters requiring stockholder approval, including the election of directors. This control could have the effect of delaying or preventing a change of control of our company or changes in management and will make the approval of certain transactions difficult or impossible without the support of these stockholders.

Anti-takeover provisions in our charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management and limit the market price of our common stock.

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

- authorize our board of directors to issue, without further action by the stockholders, up to 50,000,000 shares of undesignated preferred stock and up to approximately 1,000,000,000 shares of authorized but unissued shares of common stock;
- require that any action to be taken by our stockholders be effected at a duly called annual or special meeting and not by written consent;

- specify that special meetings of our stockholders can be called only by our board of directors, the Chair of the Board, the Chief Executive Officer or the President;
- establish advance notice procedures for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;
- establish that our board of directors is divided into three classes, Class I, Class II and Class III, with each class serving staggered terms (until our board of directors is fully declassified beginning with the 2027 annual meeting of stockholders);
- provide that our directors may be removed only for cause; and
- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum.

These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management. In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which limits the ability of stockholders owning in excess of 15% of our outstanding voting stock to merge or combine with us.

Our amended and restated bylaws designate a state or federal court located within the State of Delaware as the exclusive forum for certain stockholder litigation matters, and also provide that the federal district courts will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act, each of which could limit our stockholders' ability to choose the judicial forum for disputes with us or our directors, officers, stockholders, or employees.

Our amended and restated bylaws provide that unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another State court in Delaware or the federal district court for the District of Delaware) will, to the fullest extent permitted by law, be the sole and exclusive forum for: (i) any derivative action or proceeding brought on our behalf; (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our current or former directors, stockholders, officers, or other employees to us or our stockholders; (iii) any action arising pursuant to any provision of the Delaware General Corporation Law; (iv) any action to interpret, apply, enforce or determine the validity of our amended and restated certificate of incorporation or our amended and restated bylaws; or (v) any action asserting a claim governed by the internal affairs doctrine, except as to each of (i) through (v) above, for any claim as to which such court determines that there is an indispensable party not subject to the jurisdiction of such court.

Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated bylaws also provide that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act including, without limitation and for the avoidance of doubt, any auditor, underwriter, expert, control person or other defendant.

Any person or entity purchasing, holding or otherwise acquiring any interest in any of our securities shall be deemed to have notice of and consented to the foregoing bylaw provisions. Although we believe these exclusive forum provisions benefit us by providing increased consistency in the application of Delaware law and federal securities laws in the types of lawsuits to which each applies, the exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum of its choosing for disputes with us or any of our directors, stockholders, officers or other employees, which may discourage lawsuits with respect to such claims against us and our current and former directors, stockholders, officers or other employees. In addition, a stockholder that is unable to bring a claim in the judicial forum of its choosing may be required to incur additional costs in the pursuit of actions which are subject to the exclusive forum provisions described above. Our stockholders will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder as a result of our exclusive forum provisions. Further, in the event a court finds either exclusive forum provision contained in our bylaws to be unenforceable or inapplicable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our results of operations.

Our large number of authorized but unissued shares of common stock may potentially dilute existing stockholders' stockholdings.

We have a significant number of authorized but unissued shares of common stock. Our board of directors may issue shares of common stock from this authorized but unissued pool from time to time without stockholder approval, resulting in the dilution of our existing stockholders.

We do not intend to pay dividends for the foreseeable future.

We have never declared or paid any dividends on our common stock and do not intend to pay any dividends in the foreseeable future. We anticipate that we will retain all of our future earnings for use in the operation of our business and for general corporate purposes. Any determination to pay dividends in the future will be at the discretion of our board of directors. Accordingly, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any future gains on their investments.

Risks Related to Our Notes

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

As of December 31, 2024, we had outstanding approximately $200.0 million aggregate principal amount of our 2029 Notes and $441.0 million aggregate principal amount of our 2030 Notes. The 2029 Notes will mature on August 15, 2029, subject to earlier conversion, redemption or repurchase, including upon a fundamental change. The 2030 Notes will mature on December 15, 2030, subject to earlier conversion, redemption or repurchase, including upon a fundamental change. The 2029 Notes and the 2030 Notes are collectively referred to as the Notes.

Holders of each series of Notes will have the right to require us to repurchase all or a portion of their Notes upon the occurrence of a fundamental change before the maturity date at a repurchase price equal to 100% of the principal amount of the Notes of the applicable series to be repurchased, plus unpaid interest to, but excluding, the applicable maturity date. In addition, upon conversion of the Notes of a series, unless we elect to deliver solely shares of our common stock to settle such conversion (other than paying cash in lieu of delivering any fractional share), we will be required to settle a portion or all of our conversion obligation in cash in respect of the Notes being converted. Moreover, we will be required to repay the Notes of the applicable series in cash at the applicable maturity unless earlier converted, redeemed, or repurchased. However, we may not have enough available cash or be able to obtain financing at the time we are required to make repurchases of Notes surrendered therefor or pay cash with respect to Notes being converted or at their maturity.

In addition, our ability to repurchase the Notes or to pay cash upon conversions of Notes or at the applicable maturity may be limited by law, regulatory authority or agreements governing our future indebtedness. Our failure to repurchase Notes of a series at a time when the repurchase is required by the applicable indenture or to pay cash upon conversions such Notes or at the applicable maturity as required by the applicable indenture would constitute a default under such indenture. A default under either indenture or the occurrence of a fundamental change under either indenture itself could also lead to a default under agreements governing our future indebtedness. Moreover, the occurrence of a fundamental change under either indenture could constitute an event of default under any such agreement. If the payment of the related indebtedness were to be accelerated after any applicable notice or grace periods, we may not have sufficient funds to repay the indebtedness or to pay cash amounts due upon conversion, upon required repurchase or at maturity of the applicable series of Notes.

The Side Letter to our 2029 Notes imposes operating restrictions on us.

On November 21, 2024, in connection with the issuance of the 2029 Notes, the Company and SB Northstar LP ("SBN") entered into a letter agreement (the "Letter Agreement") pursuant to which the Company and SBN agreed that, for so long as SBN and its affiliates hold at least $180 million aggregate principal amount of the 2029 Notes, the Company and its subsidiaries are subject to certain negative covenants that restrict the Company's and its subsidiaries' ability to incur additional indebtedness and create liens, in each case, subject to the exceptions set forth in the Letter Agreement, including exceptions which permit the Company to incur up to $75 million in aggregate principal amount of secured indebtedness pursuant to Credit Facilities (as defined in the Letter Agreement).

Additionally, the Letter Agreement restricts the ability of the Company and its subsidiaries from guaranteeing any indebtedness or incurring certain indebtedness outside of the ordinary course of business unless, in each case, the Company and its subsidiaries concurrently provide a guarantee of the Company's obligations under the 2029 Notes.

These covenants may adversely affect our ability to finance our operations, meet or otherwise address our capital needs, pursue business opportunities or react to market conditions, or otherwise restrict our activities or business plans.

A breach of any of the covenants under the Letter Agreement could result in an event of default under the 2029 Notes. As of December 31, 2024, we were in compliance with all covenants under the Letter Agreement. However, if an event of default occurs, SBN could accelerate our obligations under the 2029 Notes. Any such acceleration could result in an event of default under our other indebtedness, including the 2030 Notes.

If the Notes are converted, it may adversely affect our financial condition and operating results.

Holders of either series of Notes are entitled to convert their respective series of Notes at any time at their option. If one or more holders elect to convert the Notes of the applicable series, unless we elect to satisfy our conversion obligation by delivering solely shares of our common stock (other than paying cash in lieu of delivering any fractional share), we would be required to settle a portion or all of our conversion obligation in cash, which could adversely affect our liquidity. In addition, issuances of shares of common stock upon conversion of our Notes could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity securities. The existence of the Notes may encourage short selling by market participants because the conversion of the Notes could depress the price of our common stock.

General Risk Factors

Unfavorable global economic or political conditions could adversely affect our business, financial condition or results of operations.

General conditions in the global economy and in the global financial markets could adversely affect our results of operations, and the overall demand for nucleic acid sequencing products may be particularly vulnerable to unfavorable economic conditions. A global financial crisis, inflation or a global or regional political disruption, as well as acts of terrorism, hostilities, military conflict and acts of war, including any further escalation of the conflict in the Middle East and the war in Ukraine, as well as the related responses, could cause extreme volatility in the capital and credit markets. A severe or prolonged economic downturn or political disruption could result in a variety of risks to our business, including weakened demand for our products and our ability to raise additional capital when needed on acceptable terms, if at all. A weak or declining economy or political disruption could also strain our manufacturers or suppliers, possibly resulting in supply disruption, or cause our customers to delay making payments for our product and services. An impairment in value of our tangible or intangible assets could also be recorded as a result of weaker economic conditions. Any of the foregoing could harm our business and we cannot anticipate all of the ways in which the political or economic climate and financial market conditions could adversely impact our business. For more information on impairment considerations, see "*—The commercialization and sales of our current or future products may be unsuccessful or less successful than anticipated. While we plan to continue pursuing new products and expand into adjacent markets, we have limited experience in managing and selling multiple products and, as a result, may face challenges selling in new markets and fail to successfully carry out these initiatives, which may adversely impact our business, financial condition or results of operation.*" above.

Delivery of our products could be delayed or disrupted by factors beyond our control, and we could lose customers as a result.

We rely on third-party carriers for the timely delivery of our products. As a result, we are subject to carrier disruptions and increased costs that are beyond our control. Any failure to deliver products to our customers in a safe and timely manner may damage our reputation and brand and could cause us to lose customers. If our relationship with any of these third-party carriers is terminated or impaired or if any of these carriers are unable to deliver our products, the delivery of our products by our customers may be delayed, which could harm our business and financial results. The failure to deliver our products in a safe and timely manner may harm our relationship with our customers, increase our costs and otherwise disrupt our operations.

Doing business internationally creates operational and financial risks for our business.

We currently conduct operations in various countries and jurisdictions, and continue to expand to new international jurisdictions as part of our growth strategy and have experienced an increasing concentration of sales in certain regions outside the U.S. We sell directly and through distribution partners throughout Europe, the Asia-Pacific region, Mexico, Brazil, and South Africa and have a significant portion of our sales and customer support personnel in Europe and the Asia-Pacific region. As a result, we or our distribution partners may be subject to additional regulations and increased diversion of management time and efforts. Conducting and launching operations on an international scale requires close coordination of activities across multiple jurisdictions and time zones and consumes significant management resources. If we fail to coordinate and manage these activities effectively, our business, financial condition or results of operations could be materially and adversely affected and failure to comply with laws and regulations applicable to business operations in foreign jurisdictions may also subject us to significant liabilities and other penalties. International operations entail a variety of other risks, including, without limitation:

- challenges in staffing and managing foreign operations;
- potentially longer sales cycles and more time required to engage and educate customers on the benefits of our platform outside of the United States;
- the potential need for localized software and documentation;
- reduced protection for intellectual property rights in some countries and practical difficulties of enforcing intellectual property and contract rights abroad;
- defending against intellectual property claims in other countries;

- restrictions on both inbound and outbound cross-border investment, including enhanced oversight by the Committee on Foreign Investment in the United States (“CFIUS”) and substantial restrictions on investment from China;
- U.S. and foreign government trade restrictions, including those which may impose restrictions on the importation, exportation, re-exportation, sale, shipment or other transfer of programming, technology, components, and/or services to foreign persons;
- changes in diplomatic and trade relationships, including new tariffs, trade protection measures, import or export licensing requirements, trade embargoes, sanctions, and other trade barriers;
- tariffs imposed by the U.S. on goods from other countries and tariffs imposed by other countries on U.S. goods, which may be imposed on products such as ours, the scope and duration of which, if implemented, remains uncertain;
- deterioration of political relations among, between, and within the U.S., Russia, China, Japan, Korea, Mexico, Canada, the United Kingdom (“U.K.”), and the European Union ("E.U."), which could have a material adverse effect on our sales and operations in these countries;
- changes in social, political, and economic conditions or in laws, regulations and policies governing foreign trade, manufacturing, development, and investment both domestically as well as in the other countries and jurisdictions into which we sell our products;
- difficulties in obtaining export licenses or in overcoming other trade barriers and restrictions resulting in delivery delays;
- fluctuations in currency exchange rates and the related effect on our results of operations;
- increased financial accounting and reporting burdens and complexities;
- potential limits to travel as a result of epidemics or pandemics;
- disruptions to global trade due to disease outbreaks or conflicts;
- potential increases on tariffs or restrictions on trade generally; and
- significant taxes or other burdens of complying with a variety of foreign laws and regulations, including laws and regulations relating to privacy and data protection such as the E.U. General Data Protection Regulation.

In conducting our international operations, we are subject to U.S. laws relating to our international activities, such as the Foreign Corrupt Practices Act of 1977, as well as foreign laws relating to our activities in other countries, such as the United Kingdom Bribery Act of 2010. Additionally, the inclusion of one of our foreign customers on any applicable U.S. Government sanctioned persons list, including but not limited to the U.S. Department of Commerce’s List of Denied Persons and the U.S. Department of Treasury’s List of Specially Designated Nationals and Blocked Persons List, could be material to our earnings. Failure to comply with these laws may subject us to claims or financial and/or other penalties in the United States and/or foreign countries that could materially and adversely impact our operations or financial condition. These risks have become increasingly prevalent as we have expanded our sales into countries that are generally recognized as having a higher risk of corruption.

We face risks related to the current global economic environment, which could delay or prevent our customers from purchasing our products, which could in turn harm our business, financial condition, and results of operations. The state of the global economy continues to be uncertain. The current global economic conditions and uncertain credit markets and concerns regarding the availability of credit pose a risk that could impact customer demand for our products, as well as our ability to manage normal commercial relationships with our customers, suppliers, and creditors, including financial institutions. If the current global economic environment deteriorates, our business could be negatively affected.

Moreover, 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 revenue from international customers may be negatively impacted as increases in the U.S. dollar relative to our international customers' local currencies could make our products more expensive, impacting our ability to compete or as a result of financial or other instability in such locations which could result in decreased sales of our products. Our costs of materials from international suppliers may also increase 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. Such actions may materially and adversely impact our financial condition and results of operations.

Violations of complex foreign and U.S. laws and regulations could result in fines and penalties, criminal sanctions against us, our officers, or our employees, prohibitions on the conduct of our business and on our ability to offer our products and services in one or more countries, and could also materially affect our brand, our international growth efforts, our ability to attract and retain employees, our business, and our operating results. Even if we implement policies or procedures designed to ensure compliance with these laws and regulations, there can be no assurance that our distribution partners, our employees, contractors, or agents will not violate our policies and subject us to potential claims or penalties.

If we fail to maintain proper and effective internal controls, our ability to produce accurate financial statements on a timely basis could be impaired, which would adversely affect our business and our stock price.

Ensuring that we have adequate internal financial and accounting controls and procedures in place to produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be evaluated frequently. We may in the future discover areas of our internal financial and accounting controls and procedures that need improvement. Operating as a public company requires sufficient resources within the accounting and finance functions in order to produce timely financial information, ensure the level of segregation of duties, and maintain adequate internal control over financial reporting customary for a U.S. public company.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP. Our management does not expect that our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within our company will have been detected.

Pursuant to Section 404 of the Sarbanes-Oxley Act, we perform periodic evaluations of our internal control over financial reporting. While we have in the past performed this evaluation and concluded that our internal control over financial reporting was operating effectively, there can be no assurance that in the future material weaknesses or significant deficiencies will not exist or otherwise be discovered. In addition, if we are unable to produce accurate financial statements on a timely basis, investors could lose confidence in the reliability of our financial statements, which could cause the market price of our common stock to decline and make it more difficult for us to finance our operations and growth.

Our business could be negatively impacted by changes in the United States political environment.

Our products depend on the availability of genetic data and its utilization in clinical research by academic and governmental research institutions, commercial testing and service laboratories, genome centers, public health labs, hospitals and clinical research institutes, CROs, pharmaceutical companies, and agricultural companies. As a result, changes in the regulatory environment affecting such institutions could adversely affect our business or results of operations. For example, reduced allocations to government agencies that fund research and development activities, such as the recent announcements regarding NIH funding involving a cap on the institute's indirect funding rates, or targeted cancellations by the U.S. federal government of certain grants or contracts may significantly impact the markets in which we compete.

There is significant ongoing uncertainty with respect to potential legislation, regulation and government policy at the federal level, as well as the state and local levels. Specific legislative and regulatory proposals discussed during election campaigns and more recently that might materially impact us include, but are not limited to, changes to spending priorities and potential reductions in research funding. Uncertainty about U.S. government funding has posed, and may continue to pose, a risk as customers may choose to postpone or reduce spending in response to actual or anticipated restraints on funding. To the extent changes in the political environment have a negative impact on us or on our markets, our business, results of operation and financial condition could be materially and adversely impacted in the future.

Disruption of critical information technology systems or material breaches in the security of our systems could harm our business, customer relations and financial condition.

Information technology ("IT") helps us to operate efficiently, interface with customers, maintain financial accuracy and efficiently and accurately produce our financial statements. IT systems are used extensively in virtually all aspects of our business, including in our products, sales forecast, order fulfillment and billing, customer service, logistics, and management of data from running samples on our products. Our success depends, in part, on the continued and uninterrupted performance of our IT systems. Our IT systems, including those used in our products, may be vulnerable to damage from a variety of sources, including telecommunications or network failures, power loss, natural disasters, human acts, computer viruses, ransomware, computer denial-of-service attacks, unauthorized access to customer or employee data or company trade secrets, and other attempts to harm our systems. Furthermore, there may be a heightened risk of potential cybersecurity incidents and security breaches to which we could be vulnerable by state-sponsored or affiliated actors or others in connection with political uncertainty and conflict in the Middle East and the war in Ukraine. 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. Some of our IT infrastructure still utilizes outdated legacy systems, software and hardware, some of which may be approaching end-of-life or end of support, and that may be particularly susceptible to cybersecurity breaches, errors and operational failures. Upgrading, replacing and enhancing such infrastructure may be expensive and put the continuity of our operations at risk while a failure to do so may make us more susceptible to the risks discussed above.

If we do not allocate and effectively manage the resources necessary to build and sustain the proper IT infrastructure, including those used in our products, we could be subject to transaction errors, processing inefficiencies, loss of customers, business disruptions or loss of or damage to intellectual property. 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, perhaps materially. Any such impairment could materially and adversely affect our reputation, financial condition, results of operations, cash flows and the timeliness with which we report our internal and external operating results.

Security breaches and other disruptions could compromise our information and expose us to liability, which would 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, suppliers and business partners, and personal information of our customers and employees, in our data centers and on our networks. The secure processing, maintenance and transmission of this information is critical to our operations. Despite our security measures, our IT infrastructure may be vulnerable to attacks by hackers, computer viruses, malicious codes, ransomware, unauthorized access attempts, and cyber- or phishing-attacks, or breached or otherwise disrupted due to employee error, malfeasance, faulty password management or other disruptions. Third parties may attempt to fraudulently induce employees or other persons into disclosing usernames, passwords or other sensitive information, which may in turn be used to access our IT systems, commit identity theft or carry out other unauthorized or illegal activities. Any such breach or incident could compromise our systems and networks and the information stored or otherwise processed there could be accessed, publicly disclosed, lost, stolen or otherwise processed in an unauthorized manner. We engage third-party vendors and service providers to store and otherwise process some of our data, including sensitive and personal information. Our vendors and service providers may also be the targets of the risks described above, including cyber-attacks, malicious software, ransomware, phishing schemes, and fraud. Our ability to monitor our vendors and service providers' data security is limited, and, in any event, third parties may be able to circumvent those security measures, resulting in the unauthorized access to, misuse, disclosure, loss or destruction of our data, including sensitive and personal information, and disruption of our or our third-party service providers' systems. We and our third-party service providers may face difficulties in identifying, or promptly responding to, potential security breaches and other instances of unauthorized access to, or disclosure, other processing, or loss or unavailability of, information. Any hacking or other attack on our or our third-party service providers' or vendors' systems, and any unauthorized access to, or disclosure, other processing, or loss or unavailability of, information suffered by us or our third-party service providers or vendors, or the perception that any of these have occurred, could result in legal claims or proceedings, loss of intellectual property, liability under laws that protect the privacy of personal information, negative publicity, disruption of our operations and damage to our reputation, and data integrity issues, which could divert our management's attention from the operation of our business and materially and adversely affect our business, revenues and competitive position. Moreover, we may need to increase our efforts to train our personnel to detect and defend against cyber- or phishing-attacks, which are becoming more sophisticated and frequent, and we may need to implement additional protective measures to reduce the risk of potential security breaches and security incidents, which could cause us to incur significant additional expenses. Retaliatory acts by Russia in response to Western sanctions or otherwise in connection with the war in Ukraine could include cyber-attacks that could disrupt the economy generally or that may either directly or indirectly impact our operations specifically.

In addition, our insurance may be insufficient to cover our losses resulting from cyber-attacks, breaches, or other interruptions, and any incidents may result in loss of, or increased costs of, such insurance. The successful assertion of one or more large claims against us that exceed available insurance coverage, the occurrence of changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, or denials of coverage, could have a material adverse effect on our business, including our financial condition, results of operations and reputation.

Our use of artificial intelligence and machine learning technologies may result in reputational harm or liability.

We have incorporated and may continue to incorporate additional artificial intelligence and machine learning, or AIML, technologies into our sequencing platforms, marketing programs, and analysis software, and these solutions and features are advantageous to describing, enhancing, and maximizing the capabilities of our differentiated technologies and to our future growth over time. We rely and expect to rely on AIML technologies such as basecalling, variant calling, epigenetic analysis and tertiary analysis, but there can be no assurance that we will realize the desired or anticipated benefits from AIML or any at all. We may also fail to properly implement or utilize AIML technologies. Our competitors or other third parties may incorporate AIML into their products, platforms, software and services or otherwise within their business more quickly or more successfully than us, which could impair our ability to compete effectively and adversely affect our results of operations. Additionally, our use of AIML technologies may expose us to additional claims, demands and proceedings by private parties and regulatory authorities and subject us to legal liability as well as brand and reputational harm. For example, if output from AIML technologies or that they assist in producing are or are alleged to be deficient, inaccurate, or biased, or for such output, or such technologies or their development or deployment, including the collection, use, or other processing of data used to train or create such AIML technologies, to alleged to infringe upon or to have misappropriated third-party intellectual property rights or to violate applicable laws, regulations, or other actual or asserted legal obligations to which we are or may become subject, then our business, financial condition, and results of operations may be adversely affected. The legal, regulatory, and policy environments around AIML are evolving rapidly, and we may become subject to new and evolving legal and other obligations. These and other developments may require us to make significant changes to our use of AIML, including by limiting or restricting our use of AIML, and may require us to make significant changes to our policies and practices, which may necessitate expenditure of significant time, expense, and other resources. AIML also presents emerging ethical issues, and if our use of AIML becomes controversial, we may experience brand or reputational harm.

We are currently subject to, and may in the future become subject to additional, U.S. federal and state laws and regulations imposing obligations on how we collect, store and process personal information. Our actual or perceived failure to comply with such obligations could harm our business. Ensuring compliance with such laws could also impair our efforts to maintain and expand our future customer base, and thereby decrease our revenue.

In the ordinary course of our business, we currently, and in the future will, collect, store, transfer, use or process sensitive data, including personal information of employees, and intellectual property and proprietary business information owned or controlled by ourselves and other parties. The secure processing, storage, maintenance, and transmission of this critical information are vital to our operations and business strategy. We are, and may increasingly become, subject to various laws and regulations, as well as contractual obligations, relating to data privacy and security in the jurisdictions in which we operate. The regulatory environment related to data privacy and security is increasingly rigorous, with new and constantly changing requirements applicable to our business, and enforcement practices are likely to remain uncertain for the foreseeable future. These laws and regulations may be interpreted and applied differently over time and from jurisdiction to jurisdiction, and it is possible that they will be interpreted and applied in ways that may have a material adverse effect on our business, financial condition, results of operations and prospects.

In the United States, various federal and state regulators, including governmental agencies like the Consumer Financial Protection Bureau and the Federal Trade Commission, have adopted, or are considering adopting, laws and regulations concerning personal information and data security. Certain state laws may be more stringent or broader in scope, or offer greater individual rights, with respect to personal information than federal, international or other state laws, and such laws may differ from each other, all of which may complicate compliance efforts. For example, the California Consumer Privacy Act ("CCPA"), which increases privacy rights for California residents and imposes obligations on companies that process their personal information, came into effect on January 1, 2020. Among other things, the CCPA requires covered companies to provide new disclosures to California consumers and provide such consumers new data protection and privacy rights, including the ability to opt-out of certain sales of personal information. The CCPA provides for civil penalties for violations, as well as a private right of action for certain data breaches that result in the loss of personal information. This private right of action may increase the likelihood of, and risks associated with, data breach litigation. In November 2020, California also passed the California Privacy Rights Act, or ("CPRA"), which significantly expanded the CCPA as of January 1, 2023, including by introducing additional obligations such as data minimization and storage limitations and granting additional rights to consumers, among others. The enactment of the CCPA has prompted similar legislative developments in other states, and numerous other states have proposed, and in certain cases enacted, legislation relating to privacy and data security, many of which are similar to the CCPA and CPRA. Similar laws are being considered by other state legislatures. In addition, laws in all 50 U.S. states require businesses to provide notice to consumers whose personal information has been disclosed as a result of a data breach. State laws are changing rapidly and there has been discussion in the U.S. Congress of a new comprehensive federal data privacy law. These and future laws and regulations may increase our compliance costs and potential liability.

Furthermore, regulations promulgated pursuant to the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), establish privacy and security standards that limit the use and disclosure of individually identifiable health information (known as "protected health information") and require the implementation of administrative, physical and technological safeguards to protect the privacy of protected health information and ensure the confidentiality, integrity and availability of electronic protected health information. Determining whether protected health information has been handled in compliance with applicable privacy standards and our contractual obligations can require complex factual and statistical analyses and may be subject to changing interpretation. Although we take measures to protect sensitive data from unauthorized access, use or disclosure, our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or disrupted, breached or otherwise compromised due to employee error, malfeasance or other malicious or inadvertent disruptions. Any such breach or disruption could compromise our networks and the information stored there could be accessed, manipulated, publicly disclosed, lost, stolen, made unavailable, or otherwise processed without authorization. Any such disruption, access, breach, unavailability, theft, loss or other unauthorized processing of information, or the perception that any of these has occurred could result in legal claims or proceedings, and liability under federal or state laws that protect the privacy of personal information, such as the HIPAA, the Health Information Technology for Economic and Clinical Health Act, and regulatory penalties. Notice of breaches must be made to affected individuals, the Secretary of the Department of Health and Human Services, and for extensive breaches, notice may need to be made to the media or state attorneys general. Such a notice could harm our reputation and our ability to compete.

While we have in place formal policies and procedures related to the storage, collection, and processing of information, and have conducted data privacy audits, we continue to evaluate our compliance needs, including the need to conduct additional internal and external data privacy audits or adopt additional policies and procedures, to ensure our compliance with all applicable data protection laws and regulations. Additionally, we do not currently have policies and procedures in place for assessing our third-party vendors' compliance with applicable data protection laws and regulations. All of these evolving compliance and operational requirements impose significant costs, such as costs related to organizational changes, implementing additional protection technologies, training employees and engaging consultants, which are likely to increase over time. In addition, such requirements may require us to modify our data processing practices and policies, distract management or divert resources from other initiatives and projects, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects. Any failure or perceived failure by us or our third-party vendors, collaborators, contractors and consultants to comply with any applicable federal, state or similar foreign laws and regulations relating to data privacy and security, could result in damage to our reputation, as well as proceedings or litigation by governmental agencies or other third parties, including class action privacy litigation in certain jurisdictions, which would subject us to significant fines, sanctions, awards, penalties or judgments, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Increased scrutiny of our environmental, social or governance responsibilities may result in additional costs and risks, and may adversely impact our reputation, employee retention, and willingness of customers and suppliers to do business with us.

Investor advocacy groups, institutional investors, investment funds, proxy advisory services, stockholders, and customers are increasingly focused on environmental, social, and governance ("ESG") practices of companies. Additionally, public interest and legislative pressure related to public companies' ESG practices continues to grow. For example, the SEC has adopted final rules regarding climate-related disclosures in public companies' periodic reporting. Following several legal challenges, the SEC has issued an order staying the implementation of such rules. If the SEC prevails and lifts the stay on implementation, our compliance costs may increase.

If our ESG practices fail to meet regulatory requirements or investor or other industry stakeholders' evolving expectations and standards for responsible corporate citizenship in areas including environmental stewardship, support for local communities, board and employee diversity, human capital management, employee health and safety practices, product quality, supply chain management, corporate governance and transparency, and employing ESG strategies in our operations, our brand, reputation and employee retention may be negatively impacted and customers and suppliers may be unwilling to do business with us and potential or current investors may elect to invest in other companies with ESG practices that are perceived to be better than ours. In addition, ESG reporting and disclosure may result in additional costs and require additional resources to monitor, report, and comply with our various ESG practices as well as additional attention from our board of directors and management. If we fail to adopt ESG standards or practices as quickly as stakeholders desire, report on our ESG efforts or practices accurately, or satisfy the expectations of stakeholders, or comply with applicable regulatory requirements, our reputation, business, financial performance, and growth may be adversely impacted.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 1C. CYBERSECURITY

Risk Management and Strategy

We have established policies and processes for assessing, identifying, and managing material risk from cybersecurity threats, and have integrated these processes into our overall risk management systems and processes. We routinely assess material risks from cybersecurity threats, including any potential unauthorized occurrence on or conducted through our information systems that may result in adverse effects on the confidentiality, integrity, or availability of our information systems or any information residing therein.

We conduct periodic risk assessments to identify cybersecurity threats, as well as assessments in the event of a material change in our business practices that may affect information systems that are vulnerable to such cybersecurity threats. These risk assessments include identification of reasonably foreseeable internal and external risks, the likelihood and potential damage that could result from such risks, and the sufficiency of existing policies, procedures, systems, and safeguards in place to manage such risks.

Following these risk assessments, we evaluate whether and how to re-design, implement, and maintain reasonable safeguards to minimize identified risks; reasonably address any identified gaps in existing safeguards; and regularly monitor the effectiveness of our safeguards. We devote resources and designate high-level personnel, including our Vice President and Head of Information Technology who reports to our Chief Operating Officer, to manage the risk assessment and mitigation process.

As part of our overall risk management system, we monitor and test our safeguards, including through annual third-party vulnerability assessments. We train our employees on these safeguards, in collaboration with human resources, IT, and departmental management. Personnel at all levels and departments are made aware of our cybersecurity policies through training.

We engage assessors, consultants, auditors, or other third parties in connection with our risk assessment processes. These service providers assist us in designing and implement our cybersecurity policies and procedures, as well as to monitor and test our safeguards.

We have established procedures to evaluate and respond to cybersecurity incidents, including cybersecurity incidents at third-party service providers which have a potential to impact our data and systems. Our cybersecurity risk management is intended to address such risks, as well as other risks related to third parties.

We have not previously experienced a cybersecurity incident that was determined to be material. For additional information regarding whether any risks from cybersecurity threats are reasonably likely to materially affect our company, including our business strategy, results of operations, or financial condition, please refer to Item 1A, “Risk Factors,” in this Annual Report on Form 10-K.

Governance

One of the key functions of our board of directors is to provide oversight of our risk management process, including risks from cybersecurity threats. Our board of directors is responsible for monitoring and assessing strategic risk exposure, and our executive officers are responsible for the day-to-day management of the material risks we face. Our board of directors administers its cybersecurity risk oversight function directly as a whole, as well as through the audit committee.

Our Vice President and Head of Information Technology and our cyber committee, which includes Facilities, HR, IT, Legal, and Management, are primarily responsible to assess and manage our material risks from cybersecurity threats. Our Vice President and Head of Information Technology has years of cybersecurity experience and expertise including holding numerous applicable cybersecurity certifications, such as ISC2 Certified Information Systems Security Professional (CISSP).

Our Vice President and Head of Information Technology and our management committee on cybersecurity oversee our cybersecurity policies and processes, including those described in “Risk Management and Strategy” above. Our Vice President and Head of Information Technology is informed about and monitors the prevention, detection, mitigation, and remediation of cybersecurity incidents by leading cybersecurity risk management and working directly with our IT team. Our Vice President and Head of Information Technology also provides appropriate information and updates to our management committee on cybersecurity.

Our Vice President and Head of Information Technology and representatives from our management committee on cybersecurity provide annual briefings to the audit committee regarding our company’s cybersecurity risks and activities, including any recent cybersecurity incidents and related responses, cybersecurity systems testing, activities of third parties, and the like. Our audit committee provides regular updates to the board of directors on such reports.

ITEM 2. PROPERTIES

Our corporate headquarters, research and development facilities, and manufacturing and distribution centers are located in Menlo Park, California, where we lease approximately 180,200 square feet under a lease expiring on October 31, 2027. Additionally, our European headquarters is located in London, where we lease approximately 7,300 square feet under a lease expiring November 30, 2026. Including these leases, we lease approximately 191,000 square feet globally.

We believe that our existing facilities, together with suitable additional or alternative space available on commercially reasonable terms, will be sufficient to meet our needs.

ITEM 3. LEGAL PROCEEDINGS

U.S. District Court Proceedings

On September 26, 2019, Personal Genomics of Taiwan, Inc. (“PGI”) filed a complaint in the U.S. District Court for the District of Delaware against us for patent infringement (C.A. No. 19-cv-1810) (the “PGI District Court matter”). The matter from this complaint is based on PGI’s U.S. Patent No. 7,767,441 (the “‘441 Patent”). The complaint alleges that our Sequel systems and Sequel II systems infringe the ‘441 Patent. The complaint seeks unspecified monetary damages and an order enjoining us from infringing the ’441 Patent. On November 20, 2019, we filed our answer to the complaint, denying infringement and seeking declaratory judgements of non-infringement and invalidity of the ‘441 Patent.

On June 22, 2020, we filed a petition requesting institution of an inter-partes review ("IPR") to the Patent Trial and Appeals Board (the “Board”) at the United States Patent Office (IPR2020-01163) requesting the Board to find a set of claims in the ‘441 Patent invalid. On June 27, 2020, we filed a second petition (IPR2020-01200) requesting institution of an IPR requesting the Board to find another set of claims in the ‘441 Patent invalid. The two petitions (the “PacBio IPR Petitions”) together asserted that all of the claims relevant to the PGI complaint are invalid. On January 19, 2021, the Board ordered that both PacBio IPR Petitions be instituted on all grounds presented. On January 18, 2022, the Board issued decisions on the two IPRs. In one IPR, all challenged claims were found unpatentable, including PGI’s core device claims. In the second IPR, the Board did not find the disputed claims unpatentable. PGI and PacBio each appealed to the U.S. Court of Appeals for the Federal Circuit, which affirmed both IPR decisions on January 9, 2024.

On August 25, 2020, the court ordered a stay of the PGI District Court matter based on a joint stipulation by the parties pending a final written decision on the IPRs. Following the final written decisions on the IPRs described above, on February 2, 2022, the judge ordered that the PGI District Court matter be reopened. However, in a subsequent order dated September 15, 2022, the judge stayed the PGI District Court matter pending a final decision by the U.S. Court of Appeals for the Federal Circuit regarding the appeal described above. On February 26, 2024, we moved to transfer the case from the District of Delaware to the Northern District of California and that motion was granted on June 18, 2024. On March 18, 2024, the parties filed a joint status report in which PGI requested the Court set a revised scheduling order and we requested grant of our motion to transfer and proposed an alternate scheduling order. A case management conference was held on October 10, 2024 and the Court set a trial date of October 5, 2026. We plan to vigorously defend against the remaining claims.

On December 14, 2022, Take2 Technologies, Ltd. (“Take2”) and the Chinese University of Hong Kong (“CUHK”) filed a complaint in the U.S. District Court for Delaware against us alleging infringement of U.S. Patent No. 11,091,794 (the “’794 Patent”) (C.A. No. 22- cv-01595) (the “Take2 District Court matter”). The complaint alleges that our Sequel II systems, Sequel IIe systems, and Revio systems that operate version 11.0 or later of the SMRT Link software, infringe the ‘794 Patent. The complaint seeks unspecified monetary damages and an order enjoining us from infringing the ’794 Patent. We filed a motion to dismiss on February 14, 2023, which was denied on March 25, 2024. We also filed a motion to transfer the case from the District of Delaware to the Northern District of California which was granted on August 2, 2023 . The case was transferred on August 16, 2023 (C.A. No. 5:23-cv-04166). Take2 filed a motion to disqualify our in-house legal department from representing PacBio in the district court action on September 20, 2023. We opposed Take2’s disqualification motion on October 4, 2023. An oral hearing on the disqualification motion was held on October 26, 2023 and the court issued orders on November 6 and December 4 of 2023 partially granting the motion. While some members of the in-house legal department were disqualified, General Counsel for PacBio was not disqualified and continues to represent PacBio in the Take2 District Court matter. We filed a petition for inter partes review at the Board (IPR2024-00028) challenging the validity of all claims of the ’794 patent on October 17, 2023. The CUHK filed a preliminary response to the petition on January 26, 2024. On April 22, 2024, we filed our answer to the complaint, denying infringement and seeking declaratory judgments of non-infringement and invalidity of the ‘794 Patent. On April 24, 2024, the Board granted institution of IPR2024-00028 on the validity of all claims of the ’794 patent. On May 2, 2024, the parties filed a joint stipulation and proposed order to stay the Take2 District Court matter pending inter partes review. On May 3, 2024, the Court granted the motion to stay, and the case currently remains stayed. Briefing is complete in IPR2024-00028 and an oral hearing took place on January 23, 2025. The Board is scheduled to issue a final decision on or before April 24, 2025 that addresses the validity of all claims of the ’794 patent. On March 7, 2025, we entered into a purchase agreement with CUHK to purchase the ‘794 patent. In connection with our purchase of the ‘794 Patent, each of Take2 and CUHK, on the one hand, and PacBio, on the other hand, agreed to waive and seek the discharge of all outstanding litigation claims and patent-related challenges, including with respect to the Take2 District Court matter and IPR2024-00028. The agreement to discharge the litigation claims and the patent challenge remains subject to approval by the Northern District of California and the Board, respectively.

Proceedings in China

On May 12, 2020, PGI filed a complaint in the Wuhan Intermediate People’s Court in China alleging infringement of one or more claims of China patent No. CN101743321B (the “CN321 Patent”), which is related to the ‘441 Patent. On November 23, 2020, we filed an Invalidation Petition at the China National Intellectual Property Administration ("CNIPA") demonstrating the invalidity of the claims in the CN321 Patent on grounds of insufficient disclosure, and the lack of support, essential technical features, clarity, novelty, and inventiveness. A hearing in the invalidation proceeding at the CNIPA was held on April 29, 2021. On September 2, 2021, the CNIPA issued its decision on the Invalidation Petition and determined that all claims (1-61) of the CN321 patent were invalid. On December 1, 2021, PGI filed an appeal with the Beijing IP Court, contesting the CNIPA decision. We filed a petition with the Wuhan Intermediate People’s court requesting dismissal of the infringement action based on the CNIPA invalidation decision, and PGI filed a petition to withdraw its complaint. The Wuhan Intermediate People’s court granted PGI’s petition and dismissed the infringement action in May 2022.

Other Proceedings

From time to time, we may also be involved in a variety of other claims, lawsuits, investigations, and proceedings relating to securities laws, product liability, patent infringement, contract disputes, employment, and other matters that arise in the normal course of our business. In addition, third parties may, from time to time, assert claims against us in the form of letters and other communications.

We record a provision for contingent losses when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. We currently do not believe that the ultimate outcome of any of the matters described above is probable or reasonably estimable, or that these matters will have a material adverse effect on our business; however, the results of litigation and claims are inherently unpredictable. Regardless of the outcome, litigation can have an adverse impact on us because of litigation and settlement costs, diversion of management resources, and other factors.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Our common stock is traded on The Nasdaq Global Select Market under the symbol "PACB."

Holders of Record

As of February 28, 2025, there were approximately 85 stockholders of record of our common stock, although we believe that there are a significantly larger number of beneficial owners of our common stock.

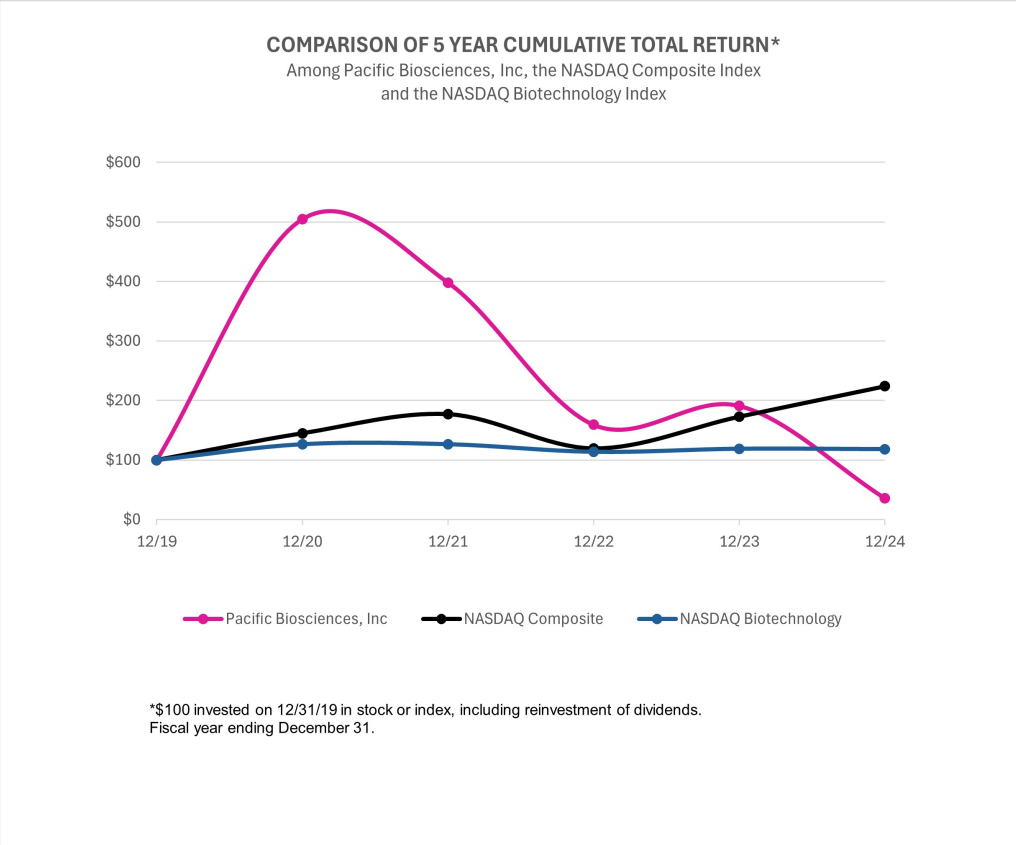
Dividend Policy

We have never declared or paid any cash dividend on our common stock and have no present plans to do so. We intend to retain earnings for use in the operation and expansion of our business.

Performance Graph

The performance graph included in this Annual Report on Form 10-K shall not be deemed "filed" for purposes of Section 18 of the Exchange Act, or incorporated by reference into any filing of Pacific Biosciences under the Securities Act or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

The following graph shows a comparison from December 31, 2019 through December 31, 2024 of the cumulative total return for our common stock, the Nasdaq Composite Index and the Nasdaq Biotechnology Index. Such returns are based on historical results and are not intended to suggest future performance. Data for The Nasdaq Composite Index and the Nasdaq Biotechnology Index assume reinvestment of dividends.



Recent Sales of Unregistered Securities

Other than as previously reported on our Current Reports on Form 8-K filed with the SEC on November 7, 2024 and November 22, 2024, there were no unregistered sales of equity securities by us during 2024.

ITEM 6. [RESERVED]

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

You should read the following discussion and analysis of our financial condition and results of operations together with our consolidated financial statements and the related notes included in this Annual Report on Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report on Form 10-K, including information with respect to our plans and strategy for our business and related financing, includes forward-looking statements that involve risks and uncertainties. You should read the "Risk Factors" section of this Annual Report on Form 10-K for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Our Management's Discussion and Analysis (MD&A) is organized in the following sections:

- Overview and Outlook
- Results of Operations
- Liquidity and Capital Resources
- Off Balance Sheet Arrangements
- Critical Accounting Policies and Estimates
- Recent Accounting Pronouncements

OVERVIEW AND OUTLOOK

About PacBio

We are a premier life science technology company that designs, develops, and manufactures advanced sequencing solutions that enable scientists and clinical researchers to improve their understanding of the genome and ultimately, resolve genetically complex problems.

Our products and technology under development stem from two highly differentiated core technologies focused on accuracy, quality, and completeness, which include our HiFi long-read sequencing technology and our Sequencing by Binding (SBB) short-read sequencing technology. Our products address solutions across a broad set of applications including human genetics, plant and animal sciences, infectious disease and microbiology, oncology, and other emerging applications. Long-read sequencing was recognized by the journal *Nature Methods* as its "method of the year" for 2022 for its contributions to biological understanding and future potential. Long-read sequencing has been applied to produce telomere-to-telomere genomes of humans, pangenome references, and has been recognized for its ability to provide more complete views of human variation.

Our focus is on creating some of the world's most advanced sequencing systems to provide our customers with the most complete and accurate view of genomes, transcriptomes, and epigenomes.

Our customers include academic and governmental research institutions, commercial testing and service laboratories, genome centers, public health labs, hospitals and clinical research institutes, CROs, pharmaceutical companies, and agricultural companies.

Strategic Objectives

Though challenging, 2024 was a productive year for PacBio as we launched products, improved our financial flexibility, and made progress in reducing cash burn.

Looking ahead to 2025, our main objectives are to grow revenue and expand gross margins through the following four activities:

- **Enabling the full-scale release of the Vega benchtop platform to broaden our market reach.** We believe this platform broadens the long-read market opportunity.
- **Accelerating samples onto the Revio platform via SPRQ chemistry and application kits.** The SPRQ chemistry enables the sub-$500 HiFi genome, improves methylation detection capabilities, and achieves a 75% reduction in DNA input requirements for human whole genome sequencing. These features can drive more samples onto HiFi sequencing than ever before.
- **Investing in future product launches to diversify our offerings.** We continue to develop sequencing systems designed to increase throughput and lower the cost to sequence a genome, which we believe will allow us to address an even larger part of the market. Additionally, we continue to develop kitted-solutions, like our Kinnex Full-length RNA kits and PureTarget, and enhance our on-market sequencers with products like SPRQ chemistry to drive more sequencing volume.
- **Progressing our clinical strategy to improve outcomes and create durability.** In 2024 Revio was increasingly being used in LDT and clinical research settings to consolidate multiple tests and address complex genetic challenges.

We continue to believe that with the capabilities of our HiFi chemistry and SMRT technology, we can be a market leader in whole-genome clinical sequencing. Leading institutions have adopted our products to study rare and inherited disease. We believe the market opportunity for clinical sequencing is significant and could drive substantial revenue growth for the company. We plan to continue to pursue partner collaborations where the technologies being developed or applications being considered extend beyond whole-genome clinical sequencing. Collaborative arrangements add to the awareness of our products and service offerings and may drive new applications for use of our technology.

Financial Overview

Key highlights of our 2024 consolidated financial results include the following:

Revenue of	Gross Profit of	Operating Loss of	Cash, cash equivalents, and investments of
$154 M	**$37 M**	**$474 M**	**$390 M**
compared to $201 M in the prior year	representing 24% of gross margin	compared to $334 M in the prior year	compared to $631 M last year

- Revenue decreased $46.5 million, or 23%, to $154.0 million for the year ended December 31, 2024, as compared to $200.5 million for the year ended December 31, 2023. Revenue was comprised of $65.8 million in instrument revenue, approximately $70.3 million in consumables revenue and $17.9 million in service and other revenue for the year ended December 31, 2024. The decrease was primarily due to lower Revio unit sales and lower average selling prices, which was partially offset by higher consumable sales. While we do not expect Vega to meaningfully impact Revio sales, we are mindful that there may be some cases where potential customers take more time to assess our new offerings, which may prolong some sales cycles. We ended the year with cumulative shipments of 270 Revio systems.

- Gross profit decreased for the year ended December 31, 2024, primarily due to the decrease in revenue described above, $4.4 million of restructuring charges, and an increase of $7.4 million in amortization of acquired intangible assets, partially offset by lower inventory adjustments. During the year ended December 31, 2023 we recognized an increase of approximately $4.6 million of inventory adjustments primarily related to excess consumables inventory resulting from faster-than-expected decline in demand of Sequel II/IIe consumables due primarily to a faster than expected ramp on the Revio system. Gross margins may also be affected by product mix, manufacturing efficiencies, warranty cost improvements, average selling price fluctuations, future product launches, changes to inventory reserves, and costs of raw materials.
- Loss from operations increased $139.8 million or 42%, to $474.3 million for the year ended December 31, 2024, as compared to $334.5 million for the year ended December 31, 2023. Operating expenses increased $124.3 million primarily driven by $184.5 million of impairment charges, $20.8 million of restructuring charges, and an increase of $11.8 million in amortization of acquired intangible assets, partially offset by a $15.9 million decrease in the change in the fair value of the contingent consideration, a $9.0 million decrease in non-recurring merger-related costs, and a decrease in research and development expenses primarily driven by a decrease in personnel and related expenses due to restructuring activities.
- Cash, cash equivalents, and investments were $389.9 million at December 31, 2024, which represents a 38% decrease compared to the balance of $631.4 million at December 31, 2023. The decrease in cash includes approximately $50.2 million of payments made in conjunction with the convertible notes exchange transaction in November 2024.

The median sales cycle for Revio instrument purchases continues to be elongated. We believe this has been caused by, among other reasons, the uncertainty surrounding the funding for new capital equipment, in particular, uncertainty in the United States related to NIH and academic funding; procurement delays; small-to-mid-size existing customers yet to increase their sample volumes to drive an upgrade to Revio; new customers, which have shown they have longer sales cycles compared to existing PacBio customers; and sample volumes materializing slower than expected for some potential Revio customers.

We believe our consumables revenue was also impacted primarily by slower-than-expected ramp-up in sequencing by our small- to mid-sized customers, many of whom are new to PacBio; sample delays impacting sequencing volume at certain large customers; and some service providers in China operating at lower utilization as a result of the difficult funding environment.

Macroeconomic dynamics impacting the Company in the future may include rising inflation, geopolitical tensions, volatile capital markets, tariffs, uncertainty in the United States related to NIH and academic funding, and fluctuating exchange rates. These factors could continue to impact our revenues and results of operations in future periods; however, the magnitude and duration of these impacts is uncertain and inherently unpredictable.

On an ongoing basis, we evaluate our significant estimates, including those related to the valuation of goodwill, indefinite-lived and finite-lived assets. However, these estimates could change in future periods based on events or changes in circumstances, which could result in material future impairment charges. We recorded $184.5 million of impairment charges during the year ended December 31, 2024. See additional discussion below in Results of Operations, as well as *Note 4. Balance Sheet Components* in Part II, Item 8 of this Annual Report on Form 10-K for further information. Additionally, refer to the Critical Accounting Policies and Estimates section later in this Item 7 for further discussion on the Company's asset impairment assessments.

See the *Risk Factors* section for further discussion.

RESULTS OF OPERATIONS

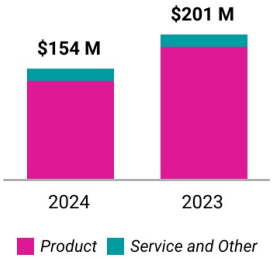
A detailed discussion of our consolidated financial results comparison between 2024 and 2023 is presented below. A discussion of the changes in our results of operations between the years ended December 31, 2023 and December 31, 2022, has been omitted from this Annual Report on Form 10-K but may be found in *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations* of our *Annual Report on Form 10-K* for the year ended December 31, 2023, filed with the Securities and Exchange Commission on February 28, 2024, which is incorporated herein by reference, and is available free of charge on the SEC's website at www.sec.gov and our corporate website (www.pacb.com).

Comparison of the Years Ended December 31, 2024 and 2023

	Years Ended December 31,			
(in thousands, except per share amounts)	2024	2023	$ Change	% Change
Revenue:				
Product revenue	$ 136,149	$ 183,872	$ (47,723)	(26 %)
Service and other revenue	17,865	16,649	1,216	7 %
Total revenue	154,014	200,521	(46,507)	(23 %)
Cost of Revenue:				
Cost of product revenue	92,284	127,568	(35,284)	(28 %)
Cost of service and other revenue	14,057	14,754	(697)	(5 %)
Amortization of acquired intangible assets	9,393	1,983	7,410	374 %
Loss on purchase commitment	998	3,436	(2,438)	(71 %)
Total cost of revenue	116,732	147,741	(31,009)	(21 %)
Gross profit	37,282	52,780	(15,498)	(29 %)
Operating Expense:				
Research and development	134,922	187,170	(52,248)	(28 %)
Sales, general and administrative	175,017	169,818	5,199	3 %
Impairment charges	184,500	—	184,500	—
Merger-related expenses	—	9,042	(9,042)	(100) %
Change in fair value of contingent consideration	(850)	15,060	(15,910)	(106 %)
Amortization of acquired intangible assets	18,006	6,157	11,849	192 %
Total operating expense	511,595	387,247	124,348	32 %
Operating loss	(474,313)	(334,467)	(139,846)	42 %
Loss on extinguishment of debt	—	(2,033)	2,033	(100 %)
Gain on debt restructuring	154,407	—	154,407	—
Interest expense	(13,412)	(14,343)	931	(6 %)
Other income, net	23,783	32,684	(8,901)	(27 %)
Loss before income taxes	(309,535)	(318,159)	8,624	(3 %)
Income tax provision (benefit)	316	(11,424)	11,740	(103 %)
Net loss	$ (309,851)	$ (306,735)	$ (3,116)	1 %

Revenue

Total Revenue

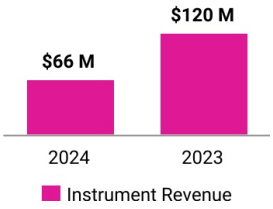


Total revenue decreased $46.5 million, or 23%, to $154.0 million for the year ended December 31, 2024, as compared to $200.5 million for the year ended December 31, 2023.

The decrease in product revenue resulted primarily from a decrease of $54.7 million in instrument revenue, partially offset by an increase of approximately $6.9 million in consumable revenue.

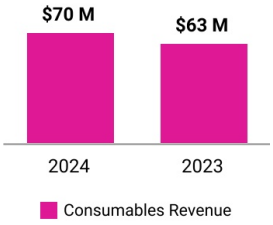
Service and other revenue increased approximately $1.3 million to $17.9 million for the year ended December 31, 2024 as compared to $16.6 million for the year ended December 31, 2023.

Instrument Revenue



Instrument revenue decreased $54.7 million, or 45%, to $65.8 million for the year ended December 31, 2024, as compared to $120.5 million for the year ended December 31, 2023, primarily due to the sale of 97 Revio systems during the year ended December 31, 2024 compared to 173 Revio systems during the year ended December 31, 2023.

Consumables Revenue



Consumables revenue increased approximately $6.9 million, or 11%, to $70.3 million for the year ended December 31, 2024, as compared to $63.4 million for the year ended December 31, 2023. The increase in consumable sales was primarily due to higher Revio consumables and library preparation sales attributable to the growth in the Revio instrument installed base, partially offset by a decline in Sequel II and IIe consumables as customers transition to Revio. We expect Revio consumable sales to increase as the installed base grows. While we expect to see a decline in Sequel II and IIe consumable sales resulting from the product transition, there is uncertainty as to the rate at which these sales will decline.

Cost of Revenue, Gross Profit, and Gross Margin

Cost of product revenue decreased $35.3 million, or 28%, for the year ended December 31, 2024, compared to the year ended December 31, 2023 primarily driven by the decrease in revenue described above and lower inventory adjustments. During the year ended December 31, 2023, we recognized an increase of approximately $4.6 million of inventory adjustments primarily related to excess consumables inventory resulting from faster-than-expected decline in demand of Sequel II/IIe consumables due primarily to a faster than expected ramp on the Revio system. These decreases were partially offset by restructuring charges in cost of revenue of $4.4 million, including $3.6 million of charges for excess inventory due to a decrease in internal demand relating to the expense reduction initiatives during the year ended December 31, 2024. Cost of revenue included amortization attributable to acquired intangible assets of $9.4 million and $2.0 million that are related to sales generating activities during the years ended December 31, 2024 and 2023, respectively. Cost of revenue included share-based compensation expense of $5.7 million and $5.4 million during the years ended December 31, 2024 and 2023, respectively.

The loss on purchase commitment was $1.0 million and $3.4 million for the years ended December 31, 2024 and 2023, respectively. The purchase commitment loss is based on an estimate of future excess inventory related to supply agreements, for which we do not expect to have related sales.

Gross profit decreased $15.5 million, or 29% to $37.3 million for the year ended December 31, 2024, compared to $52.8 million for the year ended December 31, 2023. Gross margin was 24% for the year ended December 31, 2024, compared to gross margin of 26% for the year ended December 31, 2023. The decrease was primarily due to the decrease in revenue described above, restructuring charges, and an increase of $7.4 million in amortization of acquired intangible assets, partially offset by lower inventory adjustments. Gross margins may also be affected by product mix, manufacturing efficiencies, warranty cost improvements, average selling price fluctuations, future product launches, changes to inventory reserves, and costs of raw materials.

Research and Development Expense

Research and development expense decreased by $52.2 million, or 28%, to $134.9 million for the year ended December 31, 2024, compared to $187.2 million for the year ended December 31, 2023. The decrease was primarily driven by a decrease in personnel and related expenses due to restructuring activities, as well as the transition of products from development to commercialization. We incurred restructuring charges of $5.9 million, primarily related to employee separation benefits during the year ended December 31, 2024. Research and development expense included share-based compensation of $19.2 million and $22.4 million during the years ended December 31, 2024 and 2023, respectively.

Sales, General, and Administrative Expense

Sales, general and administrative expense increased by $5.2 million, or 3%, to $175.0 million for the year ended December 31, 2024, compared to $169.8 million for the year ended December 31, 2023. The increase was primarily driven by restructuring charges of $14.9 million, primarily related to employee separation benefits and lease-related costs during the year ended December 31, 2024, partially offset by a decrease in personnel expenses. We expect to incur an additional $0.9 million of remaining estimated restructuring costs through 2025 relating to the actions taken in 2024. Sales, general, and administrative expense included share-based compensation expenses of $46.2 million and $44.3 million during the years ended December 31, 2024 and 2023, respectively.

Impairment Charges

We identified indicators of impairment primarily relating to significant declines in our stock price and market capitalization compared to net book value, increases in the carrying value of the reporting unit, and changes in the amount and timing of expected future cash flows due to macroeconomic headwinds, among others, and performed interim impairment tests during the year ended December 31, 2024. The impairment tests showed the carrying amounts of our goodwill and in-process research and development ("IPR&D") exceeded fair values. As a result, we recorded $184.5 million of impairment charges for the year ended December 31, 2024. See *Note 4. Balance Sheet Components* in Part II, Item 8 of this Annual Report on Form 10-K for further details.

Merger-Related Expenses

Merger-related expenses of $9.0 million during the year ended December 31, 2023, consist of $4.9 million of transaction costs arising from the acquisition of Apton, $2.8 million of compensation expense resulting from the liquidity event bonus plan in connection with the Apton acquisition, and $1.3 million of share-based compensation expense resulting from the acceleration of certain equity awards in connection with the Apton acquisition. We recognized $1.3 million of share-based compensation expense for the acceleration that was not attributable to pre-combination services.

Amortization of Acquired Intangible Assets

Amortization of acquired intangible assets of $18.0 million and $6.2 million during the years ended December 31, 2024 and 2023, respectively, consists of amortization expense attributable to acquired intangible assets that are not directly related to sales generating activities.

Change in Fair Value of Contingent Consideration

Change in fair value of contingent consideration during the year ended December 31, 2024, represents the remeasurement impact of the Apton contingent consideration due upon the achievement of the milestone.

Change in fair value of contingent consideration during the year ended December 31, 2023, represents the remeasurement impact of the Omniome and Apton contingent consideration liability due upon the achievement of the respective milestone. The Omniome milestone was achieved in September 2023.

Loss on Extinguishment of Debt

Loss on extinguishment of debt of $2.0 million during the year ended December 31, 2023, represents the loss resulting from the difference in the fair value of the 2030 Notes and the principal, in addition to the write-off of the unamortized debt issuance costs on the portion of the 2028 Notes that were exchanged as part of the debt modification during the year ended December 31, 2023.

Gain on Debt Restructuring

Gain on debt restructuring of $154.4 million during the year ended December 31, 2024, represents the gain resulting from the Exchange Transaction, which qualified as a troubled debt restructuring under Accounting Standards Codification ("ASC") 470-60, Debt - Troubled Debt Restructurings by Debtors. Since the undiscounted cash flows of the new 2029 Notes were less than the carrying amount of the exchanged 2028 Notes, the carrying value of the 2029 Notes was determined based on the total undiscounted cash flows. The gain was calculated as the difference between the carrying amount of the old debt and the carrying amount of the new debt, adjusted for debt issuance costs. See *Note 5. Convertible Senior Notes* in Part II, Item 8 of this Annual Report on Form 10-K for further details.

Interest Expense

Interest expense for the year ended December 31, 2024 was $13.4 million compared to $14.3 million for the year ended December 31, 2023 and was primarily comprised of interest on the Notes.

Other Income, Net

The decrease in other income, net was primarily driven by lower investment income due to lower cash and investment balances.

Income Tax Provision (Benefit)

We recorded an income tax provision of $0.3 million for the year ended December 31, 2024. A deferred income tax benefit of $11.4 million for the year ended December 31, 2023, is related to the release of the valuation allowance for deferred tax assets due to the recognition of deferred tax liabilities in connection with the Apton acquisition. Accordingly, this benefit from income taxes is reflected on our consolidated statements of operations and comprehensive loss for the year ended December 31, 2023. We maintain a valuation allowance on the net deferred tax assets of our U.S. entities as we have concluded that it is more likely than not that we will not realize our deferred tax assets.

LIQUIDITY AND CAPITAL RESOURCES

Our primary sources of liquidity, other than our holdings of cash, cash equivalents, and investments, has primarily been through the issuance of debt or equity securities, together with cash flow from operating activities. For example, in January 2023, as discussed in *Note 9. Stockholders' Equity* in Part II, Item 8 of this Annual Report on Form 10-K, we issued and sold an aggregate of 20,125,000 shares of our common stock in a follow-on public offering for aggregate gross proceeds of approximately $201.3 million. We have historically incurred, and expect to continue to incur, operating losses and generate negative cash flows from operations on an annual basis due to the investments we intend to make as described in *Results of Operations* above, and as a result, we may require additional capital resources to execute our strategic initiatives to grow our business.

We approved and implemented certain efficiency and expense reduction initiatives during 2024. These expense reduction initiatives included workforce reductions, facilities downsizing and a refined pipeline of development programs.

Cash, Cash Equivalents, and Investments

As of December 31, 2024, we had $389.9 million in cash, cash equivalents, and investments, compared to $631.4 million at December 31, 2023. The decrease was primarily attributable to $206.1 million cash used in operating activities during the year ended December 31, 2024 and an additional $50.2 million of payments made in conjunction with the convertible notes exchange transaction in November 2024.

Convertible Senior Notes

On February 9, 2021, we entered into an investment agreement with SB Northstar LP ("SBN"), a subsidiary of SoftBank Group Corp., relating to the issuance and sale to SBN of $900.0 million in aggregate principal amount of our 2028 Notes. The 2028 Notes were issued on February 16, 2021 and, as of November 21, 2024, no 2028 Notes were outstanding.

In June 2023, we entered into a privately negotiated exchange agreement with a holder of our outstanding 2028 Notes, pursuant to which we issued $441.0 million in aggregate principal amount of our 2030 Notes in exchange for $441.0 million principal amount of the 2028 Notes, leaving approximately $459.0 million in aggregate principal amount outstanding of our 2028 Notes. Interest on the 2030 Notes is payable semi-annually in arrears on June 15 and December 15 commencing on December 15, 2023. The 2030 Notes will mature on December 15, 2030, subject to earlier conversion, redemption, or repurchase.

In November 2024, we entered into an exchange agreement with SBN, pursuant to which we agreed to exchange the remaining approximately $459.0 million in aggregate principal amount of 2028 Notes outstanding for (i) $200.0 million aggregate principal amount of the 2029 Notes, (ii) 20,451,570 shares of common stock (the "Exchange Shares") and (iii) $50.0 million of cash. The exchange and issuances closed on November 21, 2024 (the "Closing Date"). The 2029 Notes, the Exchange Shares, and shares of common stock issuable upon conversion of the 2029 Notes are subject to certain lock-up restrictions for a six-month period (the "Lock-Up Period") beginning on the Closing Date of the Exchange Transaction; the lock-up restrictions will terminate immediately prior to the consummation of any change in control of the Company. The 2029 Notes bear interest at a rate of 1.50% per annum. Interest on the 2029 Notes is payable semi-annually in arrears on February 15 and August 15 and commencing on February 15, 2025. The 2029 Notes will mature on August 15, 2029, subject to earlier conversion, redemption or repurchase.

The 2029 Notes are convertible at the option of the holder at any time from the expiration of the Lock-Up Period until the second scheduled trading day prior to the maturity date, including in connection with a redemption by the Company. The 2029 Notes are convertible into shares of our common stock based on an initial conversion rate of 204.5157 shares of common stock per $1,000 principal amount of the 2029 Notes (which is equal to an initial conversion price of approximately $4.89 per share of common stock), in each case subject to customary anti-dilution and other adjustments as a result of certain extraordinary transactions. Upon conversion of the 2029 Notes, we may elect to settle such conversion obligation in shares of our common stock, cash or a combination of shares of our common stock and cash.

The 2030 Notes are convertible at the option of the holder at any time until the second scheduled trading day prior to the maturity date, including in connection with a redemption by the Company. The 2030 Notes are convertible into shares of our common stock based on an initial conversion rate of 46.5116 shares of common stock per $1,000 principal amount of the 2030 Notes (which is equal to an initial conversion price of approximately $21.50 per share of common stock), in each case subject to customary anti-dilution and other adjustments as a result of certain extraordinary transactions. Upon conversion of the 2030 Notes, we may elect to settle such conversion obligation in shares of our common stock, cash or a combination of shares of our common stock and cash.

With certain exceptions, upon a change of control of our company or the failure of our common stock to be listed on certain stock exchanges, the holders of the Notes may require that we repurchase all or part of the principal amount of those Notes at a purchase price of par plus unpaid interest up to, but excluding, the maturity date.

The indenture governing the 2029 Notes and the 2030 Notes include customary "events of default," which may result in the acceleration of the maturity of the Notes under the respective indentures. The indentures also include customary covenants for convertible notes of this type.

Additionally, on November 21, 2024, in connection with the issuance of the 2029 Notes, the Company and SBN entered into the Letter Agreement pursuant to which the Company and SBN agreed that, for so long as SBN and its affiliates hold at least $180 million aggregate principal amount of the 2029 Notes, the Company and its subsidiaries are subject to certain negative covenants that restrict the Company's and its subsidiaries' ability to incur additional indebtedness and create liens, in each case, subject to the exceptions set forth in the Letter Agreement, including exceptions which permit the Company to incur up to $75 million in aggregate principal amount of secured indebtedness pursuant to Credit Facilities (as defined in the Letter Agreement). In addition, the Letter Agreement restricts the ability of the Company and its subsidiaries from guaranteeing any indebtedness or incurring certain indebtedness outside of the ordinary course of business unless, in each case, the Company and its subsidiaries concurrently provide a guarantee of the Company's obligations under the 2029 Notes.

See *Note 5. Convertible Senior Notes* in Part II, Item 8 of this Annual Report on Form 10-K for further details.

Additional Capital Requirements

We believe that our existing cash, cash equivalents, and investments will be sufficient to fund our projected operating and capital requirements for at least the next 12 months from the date of filing of this Annual Report on Form 10-K for the year ended December 31, 2024. Operating needs include planned costs to operate our business, including costs to fund working capital and capital expenditures. Recent and expected working and other capital requirements, in addition to the above matters, include:

- Our purchase orders and contractual obligations of approximately $57.6 million as of December 31, 2024, which consist of open purchase orders and contractual obligations in the ordinary course of business, including commitments with contract manufacturers and suppliers for which we have not received the goods or services. A majority of these purchase obligations are due within a year. Although open purchase orders are considered enforceable and legally binding, the terms generally allow us the option to cancel, reschedule and adjust our requirements based on our business needs prior to the delivery of goods or performance of services.
- As described in more detail in *Note 7 - Commitments and Contingencies* in Part II, Item 8 of this Annual Report on Form 10-K we signed a Supply Agreement, which was most recently amended in September 2024, with a supplier for the purchase of certain products over the period of 2023 through 2027. As part of the Supply Agreement, we made a $9.0 million deposit during the year ended December 31, 2022, and an additional deposit of $6.0 million in 2023, to secure the supply of certain products through the term of the contract. $3.0 million was refunded to us during the year ended December 31, 2024. If we breach the minimum volume purchase commitment during any applicable year, the supplier is entitled to retain a portion or all of the deposit corresponding to that year. If we terminate the Supply Agreement before January 15, 2027, Supplier will refund the remaining balance of the Deposit. If the supplier breaches its minimum volume supply commitment during any applicable year or portions thereof, our remedies include termination, pursuit of damages, or pursuit of specific performance.
- Our research and development expenditures of $134.9 million in 2024 and $187.2 million in 2023. While we expect to continue our investment in research and development in 2025, including enhancements of our existing products, and continued development of other new technology and products, we expect research and development expenses to decline in 2025 as compared to the year ended December 31, 2024 due to recent product transitions.
- Cash outflows for capital expenditures of $6.2 million in 2024 and $8.8 million in 2023. We expect to continue to invest in capital expenditures in fiscal 2025 to continue to support manufacturing and expansion of our business.
- Amounts related to future lease payments for operating lease obligations at December 31, 2024, totaling $27.4 million, with $11.5 million expected to be paid within the next 12 months. See *Note 12. Subsequent Events* in Part II, Item 8 of this Annual Report on Form 10-K for further details on our lease amendment entered into on March 7, 2025.
- Payments related to licensing and other arrangements, which are cancellable license agreements with third parties for certain patent rights and technology. Under the terms of these agreements, we may be obligated to pay royalties based on revenue from the sales of licensed products, or minimum royalties, whichever is greater, and license maintenance fees. The future license maintenance fees and minimum royalty payments under the license agreements are not deemed to be material.
- Payments related to acquisitions. See "*—Contingent Consideration*" below for further details on potential payments related to our recent acquisitions.

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

- our ability to successfully commercialize and develop products and solutions that address customer needs;
- the pace of adoption of our products and our ability to obtain new customers in markets;
- the progress of our research and development programs and our ability to initiate or expand research programs;

- our ability to manage manufacturing and production costs, including purchase obligations, and litigation costs, including the costs involved in preparing, filing, prosecuting, defending and enforcing intellectual property rights; and
- the extent to which we engage in collaborations with partners and acquire other businesses or technologies.

If economic, financial, business, or other factors adversely affect our ability to fund our projected operating cash requirements, we may be required to obtain funding through traditional or alternative sources of financing. We cannot be certain that funds will be available on favorable terms, or at all. If we are required and unable to raise additional capital when desired, our business, operating results, and financial condition may be adversely affected. See our risk factor captioned "*We are not cash flow positive and may not have sufficient cash to make required payments under the terms of our debt or fund our long-term planned operations*" for more information.

Cash Flow Summary

(in thousands)	Years Ended December 31, 2024	2023
Cash used in operating activities	$ (206,058)	$ (259,173)
Cash provided by investing activities	124,004	4,604
Cash (used in) provided by financing activities	(42,987)	108,891
Net decrease in cash, cash equivalents and restricted cash	$ (125,041)	$ (145,678)

Operating Activities

Our primary uses of cash in operating activities include the development of future products and product enhancements, manufacturing, and support functions related to our sales, general, and administrative activities.

Cash used in operating activities for the year ended December 31, 2024, of $206.1 million was due primarily to a $309.9 million net loss that included non-cash items such as impairment charges of $184.5 million, share-based compensation of $71.0 million, amortization of intangible assets of $27.4 million, depreciation of $13.8 million, and amortization of right-of-use assets of $12.2 million, offset by a gain on debt restructuring of $154.4 million, and accretion of discount and amortization of premium on marketable securities, net of $13.0 million. Cash flow impact from changes in net operating assets and liabilities of $40.6 million, was primarily driven by an increase of $8.3 million in inventory, net, as well as decreases of $26.3 million in accrued expenses and $11.9 million in operating lease liabilities. These uses of cash were partially offset by a decrease of $9.1 million in accounts receivable, net.

Cash used in operating activities for the year ended December 31, 2023, of $259.2 million was due primarily to a $306.7 million net loss that was partially offset by non-cash items such as share-based compensation of $72.1 million, a change in the estimated fair value of contingent consideration of $15.1 million, depreciation of $11.5 million, inventory provision of $10.6 million, amortization of intangible assets of $8.3 million, and amortization of right-of-use assets of $6.8 million, offset by accretion of discount and amortization of premium on marketable securities, net of $12.8 million, and deferred income taxes of $11.4 million. Cash flow impact from changes in net operating assets and liabilities of $59.0 million, was primarily attributable to increases of $17.8 million in accounts receivable, net, $13.8 million in inventory, net, $9.0 million in prepaid expenses and other assets, and decreases of $14.9 million in contingent consideration liability, $10.4 million in deferred revenue, and $8.8 million in operating lease liabilities, partially offset by increases of $13.1 million in accrued expenses, and $2.4 million in other liabilities.

Investing Activities

Our investing activities consist primarily of purchases, sales and maturities of investments as well as capital expenditures.

Cash provided by investing activities for the year ended December 31, 2024, was due primarily to maturities of investments of $594.0 million partially offset by purchases of investments of $498.6 million and capital expenditures of $6.2 million.

Cash provided by investing activities for the year ended December 31, 2023, was due primarily to maturities of investments of $769.5 million partially offset by purchases of investments of $756.6 million and capital expenditures of $8.8 million.

Financing Activities

Cash used in financing activities during the year ended December 31, 2024, was primarily due to payments made in conjunction with the convertible notes exchange of $50.2 million partially offset by proceeds of $7.7 million from the issuance of common stock through our equity compensation plans.

Cash provided by financing activities during the year ended December 31, 2023, resulted from net proceeds from issuance of common stock under equity offerings of $189.2 million, proceeds of $15.3 million from the issuance of common stock through our equity compensation plans, partially offset by $86.4 million due to the payment of contingent consideration, $7.4 million due to the payment of debt issuance costs, and $1.8 million due to the payment of notes payable.

OFF-BALANCE SHEET ARRANGEMENTS

As of December 31, 2024, we did not have any off-balance sheet arrangements.

In the ordinary course of business, we enter into standard indemnification arrangements. Pursuant to these arrangements, we indemnify, hold harmless, and agree to reimburse the indemnified parties for losses suffered or incurred by the indemnified party in connection with any trade secret, copyright, patent or other intellectual property infringement claim by any third party with respect to its technology, or from claims relating to our performance or non-performance under a contract, any defective products supplied by us, or any acts or omissions, or willful misconduct, committed by us or any of our employees, agents or representatives. The term of these indemnification agreements is generally perpetual after the execution of the agreement. The maximum potential amount of future payments we could be required to make under these agreements is not determinable because it involves claims that may be made against us in future periods but have not yet been made. To date, we have not incurred costs to defend lawsuits or settle claims related to these indemnification agreements.

We also enter and have entered into indemnification agreements with our directors and officers that may require us to indemnify them against liabilities that arise by reason of their status or service as directors or officers, except as prohibited by applicable law. In addition, we may have obligations to hold harmless and indemnify third parties involved with our fundraising efforts and their respective affiliates, directors, officers, employees, agents or other representatives against any and all losses, claims, damages and liabilities related to claims arising against such parties pursuant to the terms of agreements entered into between us and such third parties in connection with such fundraising efforts. To the extent that such indemnification obligations apply to the lawsuits described in *Legal Proceedings* in Part I, Item 3 of this Annual Report on Form 10-K, any associated expenses incurred are included within the related accrued litigation expense amounts. No additional liability associated with such indemnification agreements has been recorded as of December 31, 2024.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Management's Discussion and Analysis of Financial Condition and Results of Operations is based upon our consolidated financial statements, which we have prepared in accordance with U.S. GAAP. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, cost of revenue, and operating expenses, and related disclosure of contingent assets and liabilities. Management based its estimates on historical experience and on various other assumptions that it believes to be reasonable under the circumstances, the results of which form the basis for making judgements about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ materially from these estimates under different assumptions or conditions.

An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, if different estimates reasonably could have been used, or if changes in the estimate that are reasonably likely to occur could materially impact the financial statements.

Revenue Recognition

Our revenue is generated primarily from the sale of products and services. Product revenue primarily consists of sales of our instruments and related consumables; service and other revenue consist primarily of revenue earned from product maintenance agreements.

We account for a contract with a customer when there is a legally enforceable contract between us and the customer, the rights of the parties are identified, the contract has commercial substance, and collectability of the contract consideration is probable. Revenues are recognized when control of the promised goods are transferred to our customers, or services are performed, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. Invoicing typically occurs upon shipment, or delivery in the case of an instrument, and payment is typically due within 30 days from invoice. In instances where the right to payment or transfer of title is contingent upon customer acceptance of the product, revenue is deferred until the acceptance criteria has been met. Revenue from instrument service contracts is recognized as the services are rendered, typically evenly over the contract term. Revenue from development agreements generally includes upfront and milestone payments. Revenue for these agreements is recognized when each distinct performance obligation is satisfied.

We may enter into, or periodically modify, contracts with customers that include a combination of promised products and services, resulting in arrangements containing multiple performance obligations. We determine whether each product or service is distinct, in order to identify the performance obligations in the contract and allocate the contract transaction price among the distinct performance obligations. 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. Therefore, instrument revenue is recognized upon transfer of control of the asset to the customer, which is generally upon delivery for sales made to our non-distributor customers and upon shipment for sales made to our distributor customers.

The consideration for contracts with multiple performance obligations is allocated between separate performance obligations based on their individual standalone selling price. We determine the best estimate of standalone selling price using historical average selling prices combined with an assessment of current market conditions. If the standalone selling price is not directly observable, we rely on estimates by considering multiple factors including, but not limited to, overall market conditions, including geographic or regional specific factors, internal costs, profit objectives, pricing practices, and other observable inputs. We recognize revenues as performance obligations are satisfied by transferring control of the product or service to the customer or over the term of a product maintenance agreement with a customer. Our revenue arrangements generally do not provide a right of return. Revenue is recorded net of discounts and sales taxes collected on behalf of governmental authorities. We update the transaction price for expected consideration, subject to constraint. Where we expect, at contract inception, the timing of payments to be consistent with the transfer of goods or services or the contract duration to be one year or less, we do not adjust the transaction price for the effects of a significant financing component.

We periodically modify existing contracts with customers, which could change the scope or the price of the contract, or both. When a contract modification occurs, we exercise judgment to determine if the modification should be accounted for as: (i) a separate contract, (ii) the termination of the original contract and creation of a new contract, (iii) a cumulative catch-up adjustment to the original contract, or a combination thereof. Further, contract modifications require the identification and evaluation of the performance obligations of the modified contract, allocation of revenue to the remaining performance obligations and determination of the period of recognition for each identified performance obligation.

Certain of our agreements provide options to customers which can be exercised at a future date, such as the option to purchase our product at discounted prices, among others. In accounting for customer options, we determine whether an option is a material right and this may require us to exercise judgment. If a contract provides the customer an option to acquire additional goods or services at a discount that exceeds the range of discounts that we typically give for that product or service for the same class of customer, or if the option provides the customer certain additional goods or services for free, the option may be considered a material right and, therefore, a performance obligation. If the contract gives the customer the option to acquire additional goods or services at their normal standalone selling prices, we would likely determine that the option is not a material right and, therefore, account for it when the customer exercises the option. If the standalone selling price of the option is not directly observable, an estimated standalone selling price is utilized which considers adjustments for discounts that the customer could receive without exercising the option and the likelihood that the option will be exercised.

Additionally, we generally provide a one-year warranty on instruments. We accrue the cost of the assurance warranty when revenue of the instrument is recognized. Employee sales commissions are generally recorded as selling, general, and administrative expense when incurred as the amortization period for such costs, if capitalized, would have been one year or less.

Inventories

Inventories are stated at the lower of cost or net realizable value. Cost is determined using the first-in, first-out (“FIFO”) method. Adjustments to reduce the cost of inventory to its net realizable value, if required, are made for estimated excess or obsolete balances. Cost includes depreciation, labor, material, and overhead costs, including product and process technology costs. Determining net realizable value of inventories involves numerous judgements, including projecting future average selling prices, sales volumes, and costs to complete products in work in process inventories.

We make inventory purchases and commitments to meet future shipment schedules based on forecasted demand for our products. The business environment in which we operate is subject to rapid changes in technology and customer demand. We perform a detailed assessment of inventory each period, which includes a review of, among other factors, demand requirements, product life cycle and development plans, component cost trends, product pricing, product expiration, and quality issues. Based on our analysis, we record adjustments to inventory for potentially excess, obsolete, or impaired goods, when appropriate, to report inventory at net realizable value. Inventory adjustments may be required if actual demand, component costs, supplier arrangements, or product life cycles differ from our estimates. Any such adjustments would result in a charge to our results of operations.

Business Combinations

Under the acquisition method of accounting, we allocate the fair value of the total consideration transferred to the tangible and identifiable intangible assets acquired and liabilities assumed based on their estimated fair values on the date of acquisition. The fair values assigned, defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between willing market participants, are based on estimates and assumptions determined by management. These valuations require us to make estimates and assumptions, especially with respect to intangible assets. We record the excess consideration over the aggregate fair value of tangible and intangible assets, net of liabilities assumed, as goodwill. Costs that we incur to complete the business combination, such as legal and other professional fees, are expensed as they are incurred.

In connection with certain acquisitions, contingent consideration can be earned by the sellers upon completion of certain future performance milestones. In these cases, a liability is recorded on the acquisition date for an estimate of the acquisition date fair value of the contingent consideration. Changes in the fair value of contingent consideration subsequent to the acquisition date are recognized in operating expenses on our consolidated statements of operations and comprehensive loss.

We typically use the discounted cash flow method to value our acquired intangible assets. This method requires significant management judgment to forecast future operating results and utilizes significant assumptions such as assumed revenue projections, discount rates and obsolescence factors. The estimates we use to value and amortize intangible assets are consistent with the plans and estimates that we use to manage our business and are based on available historical information and industry estimates and averages. If the subsequent actual results and updated projections of the underlying business activity change compared with the assumptions and projections used to develop these values, we could experience impairment charges. In addition, we have estimated the economic lives of certain acquired assets and these lives are used to calculate depreciation and amortization expense. If our estimates of the economic lives change, depreciation or amortization expense could be accelerated or extended. We capitalize in-process research and development ("IPR&D"), which is considered indefinite lived until the completion or abandonment of the associated research and development efforts. Upon reaching the end of the relevant research and development project (i.e., upon commercialization), the IPR&D asset is amortized over its estimated useful life. If the relevant research and development project is abandoned, the IPR&D asset is expensed in the period of abandonment.

If the initial accounting for a business combination is incomplete by the end of a reporting period that falls within the measurement period, we report provisional amounts in our financial statements. During the measurement period, we adjust the provisional amounts recognized at the acquisition date to reflect new information obtained about facts and circumstances that existed as of the acquisition date that, if known, would have affected the measurement of the amounts recognized as of that date. We record these adjustments to the provisional amounts with a corresponding offset to goodwill. Any adjustments identified after the measurement period are recorded on our consolidated statements of operations and comprehensive loss.

We acquired $55.0 million of IPR&D, and $52.3 million of goodwill in connection with the acquisition of Apton Biosystems, Inc. in the third quarter of 2023.

Goodwill and Intangible Assets with Indefinite Lives — Impairment Assessment

Goodwill and other intangible assets with indefinite useful lives (i.e., IPR&D) are not amortized, however they are tested annually for impairment, as of the first day of the second and third quarter of our fiscal year, respectively, and whenever events or changes in circumstances indicate that it is more likely than not that the fair value is less than the carrying value. Events that would indicate impairment and trigger an interim impairment test include, but are not limited to, unexpected adverse business conditions, weak demand for a specific product line or business, economic factors, shifting focus to certain lines of business, unanticipated technological changes or competitive activities, loss of key personnel, changes in business strategy and acts by governments or courts.

We perform our goodwill impairment analysis at the reporting unit level. We have one reporting unit, which aligns with our reporting structure and availability of discrete financial information. During the goodwill impairment review, we assess qualitative factors to determine whether it is more likely than not that the fair value of our reporting unit is less than the carrying amount, including goodwill. The qualitative factors include, but are not limited to, macroeconomic conditions, industry and market considerations, and our 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 value of our reporting unit is less than the carrying amount, then no additional assessment is deemed necessary. Otherwise, we proceed to compare the estimated fair value of the reporting unit with the carrying value, including goodwill. If the carrying amount of the reporting unit exceeds the fair value, we record an impairment loss based on the difference. We generally perform our impairment test using a combination of an income and a market approach to determine the fair value of goodwill. The income approach utilizes estimated discounted cash flows, while the market approach utilizes comparable company information. If a quantitative assessment is performed, the evaluation includes management estimates of cash flow projections based on internal future projections and/or use of a market approach by looking at market values of comparable companies, including the observable implied multiples of those companies. Key assumptions include, but are not limited to, revenue and operating income growth rates, discount rates and other factors. We consider peer revenues and earnings trading multiples from companies that have operational and financial characteristics that are similar to the asset under measurement and estimated weighted-average costs of capital. Different assumptions from those made in our analysis could materially affect projected cash flows and the evaluation of assets for impairment. We also consider our market capitalization as a part of our analysis. We may elect to bypass the qualitative assessment in a period and proceed to perform the quantitative goodwill impairment test.

Significant estimates and assumptions used in the income approach during the fourth quarter of 2024, included revenue growth expectations and a discount rate of 12.0%. The discount rate was based on the weighted average cost of capital, determined using market, peer company, industry data, and related risk factors. The assumptions used were inherently subject to uncertainty and small changes in these assumptions could have had a significant impact on the concluded value. An increase of 100 basis points to the discount rate used in our assessment would have resulted in additional goodwill impairment of approximately $95 million. The assessed fair value was deemed reasonable based on a market capitalization reconciliation. See *Note 4. Balance Sheet Components* in Part II, Item 8 of this Annual Report on Form 10-K for further information.

During the IPR&D impairment review, we assess qualitative factors to determine whether it is more likely than not that the fair value of the IPR&D is less than the carrying amount. The qualitative factors include, but are not limited to, macroeconomic conditions, industry-specific conditions, and company-specific conditions. If, after assessing the totality of these qualitative factors, we determine that it is not more likely than not that the fair value of the IPR&D is less than the carrying amount, then no additional assessment is deemed necessary. Otherwise, we proceed to compare the estimated fair value of the IPR&D with the carrying value. If the carrying amount of the IPR&D exceeds the fair value, we record an impairment loss based on the difference. We generally perform our impairment test using an income approach to determine the fair value of IPR&D. The income approach utilizes estimated discounted cash flows. If a quantitative assessment is performed, the evaluation includes management estimates of cash flow projections based on internal future projections. Key assumptions include, but are not limited to, revenue projections, revenue growth rates, discount rates and other factors. Different assumptions from those made in our analysis could materially affect projected cash flows and the evaluation of assets for impairment. We may elect to bypass the qualitative assessment in a period and proceed to perform the quantitative impairment test. There is substantial risk inherent in forecasting revenues and spend associated with research and development, including assumptions around the timing and level of resources and investment to be made.

Significant estimates and assumptions used in the income approach during the fourth quarter of 2024, included revenue growth assumptions, a discount rate of 14.0%, and an obsolescence factor of 13 years. The carrying value of the IPR&D exceeded its estimated fair value, and we recorded an impairment of $40.0 million in the fourth quarter of 2024, primarily due to a decrease in projected cash flows. An increase of 100 basis points to the discount rate used in our analysis would have resulted in additional IPR&D impairment of approximately $5 million. A decrease of one year to the obsolescence factor used in our analysis would have resulted in additional IPR&D impairment of approximately $5 million. See *Note 4. Balance Sheet Components* in Part II, Item 8 of this Annual Report on Form 10-K for further information.

Assumptions and estimates about future values 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 unit, or if there is a delay in development of the IPR&D or lower projected sales, we may be required to record future impairment charges for goodwill and intangible assets with indefinite lives. Impairment charges could materially decrease our future results of operations and result in lower asset values on our balance sheet.

Intangible Assets and Other Finite-Lived Assets — Impairment Assessment

We capitalize finite-lived intangibles assets and generally amortize them on a straight-line basis over the estimated useful lives. We review intangible assets with finite lives and other finite-lived assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset or asset group may not be recoverable. We assess the recoverability of assets based on the estimated undiscounted future cash flows expected to result from the use and eventual disposition of the asset. If the undiscounted future cash flows are less than the carrying amount, we estimate the fair value of the assets and record an impairment loss if the carrying value exceeds the fair value. In light of the changes in circumstances that led to the recoverability assessment, we also assess the remaining estimated useful life of the assets. Factors that may indicate potential impairment include a significant decline in our stock price and market capitalization compared to net book value, significant changes in the ability of an asset to generate positive cash flows for our strategic business objectives, and the pattern of utilization of a particular asset.

In order to estimate the fair values of identifiable intangible assets with finite lives and other finite-lived assets, we estimate the present value of future cash flows from those assets. The key assumptions that we use in our

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. Management 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 the asset group, we may be required to record future impairment charges. Impairment charges could materially decrease our future results of operations and result in lower asset values on our balance sheet.

Contingent Consideration

In connection with the acquisition of Omniome in the third quarter of 2021, we entered into an arrangement where we were obligated to pay $200 million in cash and equity dependent upon the achievement of a milestone event upon the first commercial shipment of products developed from our acquired sequencing technology. In the third quarter of 2023, we commenced customer shipments of the Onso short-read sequencing instrument. The milestone payment associated with PacBio's acquisition of Omniome was triggered in September 2023 once both the Onso instrument and related consumables had been shipped to one customer. Consequently, we paid the former Omniome securityholders milestone consideration of an aggregate of approximately $100.9 million in cash and approximately 9.0 million shares of our common stock in October 2023.

In connection with the acquisition of Apton, we entered into an arrangement where we are obligated to pay former holders of Apton's outstanding equity interests $25.0 million upon the achievement of $50 million in revenue associated with a high throughput sequencer using Apton's technology, provided that the milestone event occurs prior to the five-year anniversary of the closing date of the acquisition, which we may elect to pay in cash, shares of our common stock or a combination of cash and shares of our common stock. See *Note 2. Business Acquisitions* in Part II, Item 8 of this Annual Report on Form 10-K for further information.

The contingent consideration liability was measured at fair value as of the acquisition date and is remeasured periodically at each reporting date, with changes in fair value recorded as change in fair value of contingent consideration on our consolidated statements of operations and comprehensive loss. For the Apton contingent consideration, the initial measurement and post-acquisition remeasurement required estimates and assumptions using a Monte Carlo simulation to estimate the volatility and systematic relative risk of revenues subject to sales milestone payments and discounting the associated cash payment amounts to their present values using a credit-risk-adjusted interest rate to determine the total fair value of the contingent consideration payment as of each reporting period. This method requires significant management judgment, including risk-adjusted forecasted revenues for products and services leveraging Apton's technology and an estimated credit spread. Assumptions and estimates about future values 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. Future changes in our estimates could result in expenses or gains. For the Omniome contingent consideration, the initial measurement and post-acquisition remeasurement required estimates and assumptions using a scenario-based method that considers a range of potential outcomes of milestone achievement dates and assigned probabilities of occurrence for each outcome. Outcomes were discounted to present value, which was then weighted by the probability of each scenario to determine the total fair value of the contingent consideration payment as of each reporting period. This method requires significant management judgment, including the probability of achieving certain future milestones and discount rates. Refer to *Note 3. Financial Instruments* for further discussion on valuation assumptions.

RECENT ACCOUNTING PRONOUNCEMENTS

Please see *Note 1. Organization and Significant Accounting Policies*, subsection titled "Recent Accounting Pronouncements", in Part II, Item 8 of this Annual Report on Form 10-K for information regarding applicable recent accounting pronouncements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Interest Rate and Market Risk

Our investment portfolio is exposed to market risk from changes in interest rates. The goals of our investment policy are preservation of capital, fulfillment of liquidity needs and fiduciary control of cash and cash equivalents and investments. We also seek to maximize income from our investments without assuming significant risk. To achieve our goals, we maintain a portfolio of cash equivalents and investments in a variety of securities of high credit quality. The securities in our investment portfolio are not leveraged, are classified as available for sale and are, due to their short-term nature, subject to minimal interest rate risk. The fair market value of our fixed rate securities may be adversely impacted by increases in interest rates while income earned may decline as a result of decreases in interest rates. A hypothetical 100 basis-point (one percentage point) increase or decrease in interest rates compared to rates on December 31, 2024 would have affected the fair value of our investment portfolio by approximately $2.1 million.

The carrying value of the 2029 Notes were recorded at the undiscounted cash flow amount on our consolidated balance sheets. The 2030 Notes were recorded at fair value as of the closing date of the related exchange transaction, less debt issuance costs, on our consolidated balance sheets. Because the 2029 Notes and 2030 Notes have fixed annual interest rates of 1.50% and 1.375%, respectively, we do not have any economic interest rate exposure or financial statement risk associated with changes in interest rates. The fair value of the Notes, however, may fluctuate when interest rates and the market price of our stock changes. See *Note 5. Convertible Senior Notes* in Part II, Item 8 of this Annual Report on Form 10-K for additional information.

Foreign Exchange Risk

Our revenue, expense, and capital purchasing activities are primarily transacted in U.S. dollars; however, a portion of our operations is conducted in foreign currencies. As a result, we have foreign exchange exposures relating to non-U.S. dollar denominated cash flows and monetary assets and liabilities that are denominated in currencies other than U.S. dollars. The value of the amounts is exposed to changes in currency exchange rates from the time the transactions are originated, until the time the cash settlement is converted into U.S. dollars. Our foreign currency exposure is primarily concentrated in the Euro. A 10% strengthening of the U.S. dollar exchange rate against all currencies with which we have exposure, after taking into account offsetting positions at December 31, 2024 would have resulted in a $1.8 million decrease in the carrying amounts of those net assets. Actual gains and losses in the future may differ materially from these hypothetical gains and losses based on changes in the timing and amount of foreign currency exchange rate movements and our actual exposure. Our international operations are subject to risks typical of international operations, including, but not limited to, differing economic conditions, changes in political climate, differing tax structures, other regulations and restrictions, and foreign exchange rate volatility.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.
Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Pacific Biosciences of California, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Pacific Biosciences of California, Inc. (the Company) as of December 31, 2024 and 2023, the related consolidated statements of operations and comprehensive loss**,** stockholders' equity and cash flows for each of the three years in the period ended December 31, 2024, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2024 and 2023, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2024, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2024, 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 March 17, 2025 expressed an unqualified opinion thereon.

Basis for Opinion

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

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

Critical Audit Matters

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

Revenue recognition - Identification and evaluation of performance obligations

Description of the Matter	For the year ended December 31, 2024, the Company recognized revenue of $154.0 million, including $136.1 million of product revenue, which consists primarily of instrument sales and related consumables. As described in Note 1 to the consolidated financial statements, the Company may enter into, or periodically modify, contracts with customers that include a combination of promised products and services, resulting in arrangements containing multiple performance obligations. The Company identifies performance obligations for promises to transfer distinct products or services to a customer. Contracts with customers may contain non-standard terms, requiring management to evaluate if there are additional performance obligations. For example, certain customer contracts provide options to customers which can be exercised at a future date, such as the option to purchase products at discounted prices. The Company assesses whether the specified discounts constitute material rights and, therefore, are performance obligations that are included in the allocation of the transaction price. Auditing management's identification and evaluation of certain performance obligations was challenging and involved a higher degree of judgment due to their non-standard nature.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design, and tested the operating effectiveness of the Company's internal controls addressing management's identification and evaluation of performance obligations. Our audit procedures included, among others, reading executed contracts for a sample of arrangements and evaluating whether all performance obligations were appropriately identified and accounted for based on terms of the contracts (including specified discounts on current and future purchase options).

	Impairment assessment of goodwill and indefinite-lived intangible assets
Description of the Matter	As of December 31, 2024, the Company's goodwill and indefinite-lived intangible assets balances were $317.8 million and $15.0 million, respectively. As discussed in Note 1 to the consolidated financial statements, goodwill and indefinite-lived intangible assets are tested for impairment at least annually at the reporting unit level and asset level, respectively, or more frequently if indicators of impairment exist. The Company is comprised of one reporting unit. As described in Note 4 to the consolidated financial statements, the Company identified interim indicators of impairment in 2024, resulting in total impairment charges of $184.5 million for the year ended December 31, 2024. Auditing the Company's interim impairment assessments was more complex due to the higher estimation uncertainty in determining the fair value of the reporting unit and the indefinite-lived intangible asset under the income approach. Significant assumptions used in the income approach included revenue growth expectations and the selected discount rate.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's process for determining the fair value of the reporting unit and the indefinite-lived intangible asset. This included controls over management's review of the revenue growth rates and the discount rate. Our audit procedures included, among others, evaluating the Company's valuation methodology and performing a sensitivity analysis of the assumptions to evaluate the change in the fair value resulting from changes in the assumptions to identify the assumptions that have the most significant impact on the fair value amount. We evaluated the reasonableness of projected revenue growth used within the valuations against analyst expectations, industry and market data and other guideline companies within the same industry. We also involved valuation specialists to assist in evaluating the Company's selection of the discount rates. In addition, we inspected the Company's reconciliation of the fair value of the reporting unit to the market capitalization of the Company and assessed the results.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2011.

San Mateo, California

March 17, 2025

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.
CONSOLIDATED BALANCE SHEETS

(in thousands, except per share amounts)	December 31, 2024	December 31, 2023
Assets		
Current assets		
Cash and cash equivalents	$ 55,370	$ 179,911
Investments	334,561	451,505
Accounts receivable, net	27,524	36,615
Inventory, net	58,755	56,676
Prepaid expenses and other current assets	18,781	17,040
Short-term restricted cash	690	300
Total current assets	495,681	742,047
Property and equipment, net	30,505	36,432
Operating lease right-of-use assets, net	16,091	32,593
Long-term restricted cash	1,532	2,422
Intangible assets, net	389,572	456,984
Goodwill	317,761	462,261
Other long-term assets	9,305	13,274
Total assets	$ 1,260,447	$ 1,746,013
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable	$ 16,590	$ 15,062
Accrued expenses	22,595	45,708
Deferred revenue, current	13,864	16,342
Operating lease liabilities, current	10,026	9,591
Other liabilities, current	3,224	8,326
Total current liabilities	66,299	95,029
Deferred revenue, non-current	5,900	5,530
Contingent consideration liability, non-current	18,700	19,550
Operating lease liabilities, non-current	14,914	31,606
Convertible senior notes, net, non-current	647,494	892,243
Other liabilities, non-current	546	751
Total liabilities	753,853	1,044,709
Commitments and contingencies		
Stockholders' equity		
Preferred stock, $0.001 par value:		
Authorized 50,000 shares; No shares issued or outstanding	—	—
Common stock, $0.001 par value:		
Authorized 1,000,000 shares; issued and outstanding 294,418 and 267,744 shares at December 31, 2024 and December 31, 2023, respectively	294	268
Additional paid-in capital	2,654,804	2,539,892
Accumulated other comprehensive income	422	219
Accumulated deficit	(2,148,926)	(1,839,075)
Total stockholders' equity	506,594	701,304
Total liabilities and stockholders' equity	$ 1,260,447	$ 1,746,013

See accompanying notes to the consolidated financial statements.

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS

(in thousands, except per share amounts)	Years Ended December 31, 2024	2023	2022
Revenue:			
Product revenue	$ 136,149	$ 183,872	$ 108,699
Service and other revenue	17,865	16,649	19,605
Total revenue	154,014	200,521	128,304
Cost of Revenue:			
Cost of product revenue	92,284	127,568	60,932
Cost of service and other revenue	14,057	14,754	13,899
Amortization of acquired intangible assets	9,393	1,983	733
Loss on purchase commitment	998	3,436	3,705
Total cost of revenue	116,732	147,741	79,269
Gross profit	37,282	52,780	49,035
Operating Expense:			
Research and development	134,922	187,170	193,000
Sales, general and administrative	175,017	169,818	160,854
Impairment charges	184,500	—	—
Merger-related expenses	—	9,042	—
Change in fair value of contingent consideration	(850)	15,060	2,377
Amortization of acquired intangible assets	18,006	6,157	—
Total operating expense	511,595	387,247	356,231
Operating loss	(474,313)	(334,467)	(307,196)
Loss on extinguishment of debt	—	(2,033)	—
Gain on debt restructuring	154,407	—	—
Interest expense	(13,412)	(14,343)	(14,690)
Other income, net	23,783	32,684	7,638
Loss before income taxes	(309,535)	(318,159)	(314,248)
Income tax provision (benefit)	316	(11,424)	—
Net loss	(309,851)	(306,735)	(314,248)
Other comprehensive income (loss):			
Unrealized gain (loss) on investments	203	4,984	(3,678)
Comprehensive loss	$ (309,648)	$ (301,751)	$ (317,926)
Net loss per share:			
Basic	$ (1.13)	$ (1.21)	$ (1.40)
Diluted	$ (1.59)	$ (1.21)	$ (1.40)
Weighted average shares outstanding used in calculating net loss per share			
Basic	274,488	253,629	224,550
Diluted	288,366	253,629	224,550

See accompanying notes to the consolidated financial statements.

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(in thousands)	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity
Balance at December 31, 2021	220,978	$ 221	$ 2,009,945	$ (1,087)	$ (1,218,092)	$ 790,987
Net loss	—	—	—	—	(314,248)	(314,248)
Other comprehensive loss	—	—	—	(3,678)	—	(3,678)
Issuance of common stock in conjunction with equity plans	5,527	6	11,224	—	—	11,230
Share-based compensation expense	—	—	78,613	—	—	78,613
Balance at December 31, 2022	226,505	$ 227	$ 2,099,782	$ (4,765)	$ (1,532,340)	$ 562,904
Net loss	—	—	—	—	(306,735)	(306,735)
Other comprehensive income	—	—	—	4,984	—	4,984
Issuance of common stock following milestone achievement	8,988	9	84,752	—	—	84,761
Issuance of common stock in acquisition of Apton	6,121	6	76,636	—	—	76,642
Issuance of common stock in connection with Apton liquidity event bonus plan	169	—	2,111	—	—	2,111
Issuance of common stock from Underwritten Public Equity Offering, net of issuance costs	20,125	20	189,180	—	—	189,200
Issuance of common stock in conjunction with equity plans	5,836	6	15,313	—	—	15,319
Share-based compensation expense	—	—	72,118	—	—	72,118
Balance at December 31, 2023	267,744	$ 268	$ 2,539,892	$ 219	$ (1,839,075)	$ 701,304
Net loss	—	—	—	—	(309,851)	(309,851)
Other comprehensive income	—	—	—	203	—	203
Issuance of common stock in conjunction with equity plans	6,222	6	7,697	—	—	7,703
Issuance of common stock in conjunction with convertible notes exchange	20,452	20	36,179			36,199
Share-based compensation expense	—	—	71,036	—	—	71,036
Balance at December 31, 2024	294,418	$ 294	$ 2,654,804	$ 422	$ (2,148,926)	$ 506,594

See accompanying notes to the consolidated financial statements.

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)	Years Ended December 31, 2024	2023	2022
Cash flows from operating activities			
Net loss	$ (309,851)	$ (306,735)	$ (314,248)
Adjustments to reconcile net loss to net cash used in operating activities			
Depreciation	13,774	11,463	9,480
Amortization of intangible assets	27,412	8,261	913
Amortization of right-of-use assets	12,165	6,810	6,925
Share-based compensation expense	71,036	72,118	78,613
Impairment charges	184,500	—	—
Merger-related compensation expense	—	3,395	—
Loss on extinguishment of debt	—	2,033	—
Gain on debt restructuring	(154,407)	—	—
Accretion of discount and amortization of premium on marketable securities, net	(13,044)	(12,840)	(244)
Change in the estimated fair value of contingent consideration	(850)	15,060	2,377
Inventory provision	4,618	10,584	6,027
Deferred income taxes	(205)	(11,424)	—
Other	(628)	1,059	918
Changes in assets and liabilities			
Accounts receivable, net	9,091	(17,829)	5,455
Inventory, net	(8,320)	(13,841)	(33,906)
Prepaid expenses and other assets	2,228	(8,984)	(12,324)
Accounts payable	1,405	206	1,025
Accrued expenses	(26,342)	13,103	(3,651)
Deferred revenue	(2,108)	(10,420)	(3,734)
Operating lease liabilities	(11,920)	(8,759)	(7,724)
Contingent consideration liability	—	(14,882)	—
Other liabilities	(4,612)	2,449	887
Net cash used in operating activities	(206,058)	(259,173)	(263,211)
Cash flows from investing activities			
Purchase of property and equipment	(6,188)	(8,843)	(16,750)
Purchase of intangible assets	—	—	(179)
Cash paid for purchases of acquired entities, net of cash acquired	—	(102)	—
Purchase of investments	(498,635)	(756,567)	(442,788)
Sales of investments	34,856	595	—
Maturities of investments	593,971	769,521	575,800
Net cash provided by investing activities	124,004	4,604	116,083
Cash flows from financing activities			
Proceeds from issuance of common stock under equity offerings, net of issuance costs	—	189,200	—
Proceeds from issuance of common stock from equity plans	7,703	15,319	11,230
Payment of debt issuance costs	—	(7,375)	—
Payment of contingent consideration	—	(86,411)	—

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

Payments made in conjunction with convertible notes exchange	(50,200)	—	—
Notes payable principal payoff	(490)	(1,842)	(1,608)
Net cash (used in) provided by financing activities	(42,987)	108,891	9,622
Net decrease in cash, cash equivalents, and restricted cash	(125,041)	(145,678)	(137,506)
Cash, cash equivalents, and restricted cash at beginning of period	182,633	328,311	465,817
Cash, cash equivalents, and restricted cash at end of period	$ 57,592	$ 182,633	$ 328,311
Cash and cash equivalents at end of period	55,370	179,911	325,089
Restricted cash at end of period	2,222	2,722	3,222
Cash, cash equivalents, and restricted cash at end of period	$ 57,592	$ 182,633	$ 328,311
Supplemental disclosure of cash flow information			
Interest paid	$ 14,805	$ 15,687	$ 14,049
Supplemental disclosure of non-cash investing and financing activities			
Inventory transferred to property and equipment	$ 4,194	$ 3,984	$ 2,812
Property and equipment transferred to inventory	$ (2,572)	$ (7,022)	$ (715)
Right-of-use asset and liability additions and modifications	$ 18,253	$ —	$ —
Issuance of common stock in conjunction with convertible notes exchange	$ 36,199	$ —	$ —
Issuance of common stock in acquisition of Apton and Omniome	$ —	$ 76,642	$ —
Issuance of common stock in connection with Apton liquidity event bonus plan	$ —	$ 2,111	$ —
Convertible notes exchange	$ —	$ 441,000	$ —
Issuance of common stock following milestone achievement	$ —	$ 84,761	$ —

See accompanying notes to the consolidated financial statements.

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1. ORGANIZATION AND SIGNIFICANT ACCOUNTING POLICIES

Business Overview

We are a life science technology company that designs, develops, and manufactures advanced sequencing solutions that enable scientists and clinical researchers to improve their understanding of the genome and ultimately, resolve genetically complex problems.

Our products and technology under development stem from two highly differentiated core technologies focused on accuracy, quality, and completeness, which include our HiFi long-read sequencing technology and our Sequencing by Binding (SBB) short-read sequencing technology. Our products address solutions across a broad set of applications including human genetics, plant and animal sciences, infectious disease and microbiology, oncology, and other emerging applications. Long-read sequencing was recognized by the journal Nature Methods as its “method of the year” for 2022 for its contributions to biological understanding and future potential. Long-read sequencing has been applied to produce telomere-to-telomere genomes of humans, pangenome references, and has been recognized for its ability to provide more complete views of human variation.

Our focus is on creating some of the world's most advanced sequencing systems to provide our customers with the most complete and accurate view of genomes, transcriptomes, and epigenomes.

Our customers include academic and governmental research institutions, commercial testing and service laboratories, genome centers, public health labs, hospitals and clinical research institutes, contract research organizations (CROs), pharmaceutical companies, and agricultural companies.

References in this report to “PacBio,” “we,” “us,” the “Company,” and “our” refer to Pacific Biosciences of California, Inc. and its consolidated subsidiaries.

Basis of Presentation and Consolidation

Our consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States, or U.S. GAAP, as set forth in the Financial Accounting Standards Board, or FASB, Accounting Standards Codification, or ASC. The consolidated financial statements include the accounts of Pacific Biosciences and our wholly owned subsidiaries. All intercompany transactions and balances have been eliminated.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes to the financial statements. On an ongoing basis, we evaluate our significant estimates, including those relating to the valuation of inventory, fair value of contingent consideration, valuation of acquired intangible assets, useful lives assigned to finite-lived assets, asset impairment assessments, computation of provisions for income taxes, and valuations related to our convertible senior notes. While the extent of the potential impact of current macroeconomic conditions on our business is highly uncertain, we considered information available related to assumptions and estimates used to determine the results reported and asset valuations as of December 31, 2024. Actual results could differ materially from these estimates.

Functional Currency

The U.S. dollar is the functional currency of our international operations. We remeasure foreign subsidiaries monetary assets and liabilities to the U.S. dollar and record net gains or losses from remeasurement in other income, net, on our consolidated statements of operations and comprehensive loss.

Cash, Cash Equivalents, Restricted Cash, and Investments

We consider all highly liquid investments purchased with an original maturity of 90 days or less to be cash equivalents. Cash equivalents may be comprised of money market funds, certificates of deposit, commercial paper, corporate bonds and notes, and government agencies' securities.

We classify our investments in debt securities as available-for-sale and report the investments at fair value in current assets. We evaluate our available-for-sale investments in unrealized loss positions and assess whether the unrealized loss is credit-related. Unrealized gains and losses that are not credit-related are recognized in accumulated other comprehensive income (loss) in stockholders' equity. Realized gains and losses, expected credit losses, as well as interest income, on available-for-sale securities are also reported in other income, net. The cost used in the determination of gains and losses of securities sold is based on the specific identification method. The cost of marketable securities is adjusted for the amortization of premiums and discounts to expected maturity. Premium and discount amortization is recorded in other income, net. We have the ability to hold, and do not intend to sell investments in unrealized loss positions before the recovery of their amortized cost bases.

Our investment portfolio at any point in time contains investments in cash deposits, money market funds, commercial paper, corporate debt securities, and U.S. government and agency securities with high credit ratings. We have established guidelines regarding diversification and maturities of investments with the objectives of maintaining safety and liquidity, while maximizing yield.

Restricted cash includes cash that is not readily available for use in the Company's operating activities. Restricted cash is primarily comprised of cash pledged under letters of credit.

Concentration and Other Risks

Financial instruments that potentially subject us to credit risk consist principally of interest-bearing investments and trade receivables. We maintain cash, cash equivalents, and investments with various major financial institutions. The counterparties to the agreements relating to our investment securities consist of various major corporations, financial institutions, municipalities, and government agencies of high credit standing. At December 31, 2024, most of our cash was deposited with U.S. financial institutions. Our investment policy generally restricts the amount of credit exposure to any one issuer. There is no limit to the percentage of the portfolio that may be maintained in securities issued by the U.S. Treasury and U.S. Government Agencies, or other securities fully backed by U.S. Treasury or Government agencies. We have not experienced significant credit losses from financial institutions.

Our trade receivables are derived from revenue to customers and distributors located in the United States and other countries. We perform credit evaluations of our customers' financial condition and, generally, require no collateral from our customers. The allowance for credit losses is based on our assessment of the collectability of customer accounts. We regularly review our trade receivables including consideration of factors such as historical experience, the age of the accounts receivable balances, customer creditworthiness, customer industry, and current and forecasted economic conditions that may affect a customer's ability to pay. We have not experienced any significant credit losses to date.

Although we have historically not experienced significant credit losses, our exposure to credit losses may increase if our customers are adversely affected by changes in economic pressures or uncertainty associated with local or global economic recessions, or other customer-specific factors.

For the years ended December 31, 2024, and 2023, no customer accounted for 10% or more of our total revenue. For the year ended December 31, 2022, one customer exceeded 10% of our total revenue.

As of December 31, 2024 and 2023, 36% and 49% of our accounts receivable were from domestic customers, respectively. As of December 31, 2024, no customer represented 10% or more of our net accounts receivable. As of December 31, 2023, one customer represented 10% of our net accounts receivable.

We currently purchase several key parts and components used in the manufacture of our products from a limited number of suppliers. Generally, we have been able to obtain an adequate supply of such parts and components but in certain instances have incurred additional costs to secure a supply of constrained material. An extended interruption in the supply of parts and components currently obtained from our suppliers could adversely affect our business and consolidated financial statements.

Inventory, Net

Inventories are stated at the lower of cost or net realizable value on a first-in, first-out ("FIFO") method. Adjustments to reduce the cost of inventory to its net realizable value, if required, are made for estimated excess or obsolete balances. Cost includes depreciation, labor, material, and overhead costs, including product and process technology costs. Determining net realizable value of inventories involves numerous judgements, including projecting future average selling prices, sales volumes, and costs to complete products in work in process inventories.

We make inventory purchases and commitments to meet future shipment schedules based on forecasted demand for our products. The business environment in which we operate is subject to rapid changes in technology and customer demand. We perform a detailed assessment of inventory each period, which includes a review of, among other factors, demand requirements, product life cycle and development plans, component cost trends, product pricing, product expiration, and quality issues. Based on our analysis, we record adjustments to inventory for potentially excess, obsolete, or impaired goods, when appropriate, to report inventory at net realizable value. Inventory adjustments may be required if actual demand, component costs, supplier arrangements, or product life cycles differ from our estimates. Any such adjustments would result in a charge to our results of operations.

Property and Equipment, Net

Property and equipment are stated at cost, reviewed regularly for impairment, and depreciated over the estimated useful lives of the assets, using the straight-line method. Leasehold improvements are depreciated over the shorter of the lease term or the estimated useful life of the related asset. Major improvements are capitalized, while maintenance and repairs are expensed as incurred. Transfers of assets between property and equipment, net, and inventory are transferred at standard cost and recognized at carrying value.

Estimated useful lives of the major classes of property and equipment are as follows:

	Estimated Useful Lives
Leasehold improvements	3 to 10 years
Lab equipment	3 to 5 years
Computer equipment	3 to 5 years
Computer software	3 years
Furniture and fixtures	3 to 5 years

Operating Leases

We have various operating lease agreements for office, research and development, manufacturing and distribution facilities, including our headquarters location in Menlo Park, California. As of December 31, 2024, these leases had remaining lease terms that expire between 2025 and 2027. We record operating lease right-of-use assets and liabilities on our consolidated balance sheets for all leases with a term of more than 12 months. The operating lease right-of-use assets and liabilities are calculated as the present value of remaining minimum lease payments over the remaining lease term using our estimated secured incremental borrowing rates at the commencement date. Lease payments included in the measurement of the lease liability comprise the fixed rent per the term of the Lease. Operating lease expense is recognized on a straight-line basis over the lease term, with variable lease payments, such as common area maintenance fees, recognized in the period incurred.

Business Combinations

Under the acquisition method of accounting, we allocate the fair value of the total consideration transferred to the tangible and identifiable intangible assets acquired and liabilities assumed based on their estimated fair values on the date of acquisition. These valuations require us to make estimates and assumptions, especially with respect to intangible assets. We record the excess consideration over the aggregate fair value of tangible and intangible assets, net of liabilities assumed, as goodwill. Costs that we incur to complete the business combination, such as legal and other professional fees, are expensed as they are incurred.

In connection with certain acquisitions, contingent consideration can be earned by the sellers upon completion of certain future performance milestones. In these cases, a liability is recorded on the acquisition date for an estimate of the acquisition date fair value of the contingent consideration. These estimates require significant management judgment, including probabilities of achieving certain future milestones. Changes in the fair value of the contingent consideration subsequent to the acquisition date are recognized in operating expense on our consolidated statements of operations and comprehensive loss.

If the initial accounting for a business combination is incomplete by the end of a reporting period that falls within the measurement period, we report provisional amounts in our financial statements. During the measurement period, we adjust the provisional amounts recognized at the acquisition date to reflect new information obtained about facts and circumstances that existed as of the acquisition date that, if known, would have affected the measurement of the amounts recognized as of that date. We record these adjustments to the provisional amounts with a corresponding offset to goodwill. Any adjustments identified after the measurement period are recorded on our consolidated statements of operations and comprehensive loss.

Goodwill and Intangible Assets with Indefinite Lives

Assets acquired, including intangible assets and capitalized in-process research and development ("IPR&D"), 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. Intangible assets acquired in a business combination that are used for IPR&D activities are considered indefinite lived until the completion or abandonment of the associated research and development efforts. Upon reaching the end of the relevant research and development project (i.e., upon commercialization), the IPR&D asset is assessed for impairment and then amortized over its estimated useful life. If the relevant research and development project is abandoned, the IPR&D asset is expensed in the period of abandonment.

Goodwill and IPR&D are not amortized; however, they are reviewed for impairment at least annually. We perform annual impairment testing of goodwill as of the first day of the second quarter, or more frequently if indicators of impairment exist. We perform annual impairment testing of IPR&D as of the first day of the third quarter, or more frequently if indicators of impairment exist. Events that would indicate impairment and trigger an interim impairment test include, but are not limited to, unexpected adverse business conditions, weak demand for a specific product line or business, economic factors, shifting focus to certain lines of business, unanticipated technological changes or competitive activities, loss of key personnel, changes in business strategy and acts by governments or courts.

We perform our goodwill impairment analysis at the reporting unit level. We have one reporting unit, which aligns with our reporting structure and availability of discrete financial information. During the goodwill impairment review, we assess qualitative factors to determine whether it is more likely than not that the fair value of our reporting unit is less than the carrying amount, including goodwill. The qualitative factors include, but are not limited to, macroeconomic conditions, industry and market considerations, and our 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 value of our reporting unit is less than the carrying amount, then no additional assessment is deemed necessary. Otherwise, we proceed to compare the estimated fair value of the reporting unit with the carrying value, including goodwill. If the carrying amount of the reporting unit exceeds the fair value, we record an impairment loss based on the difference. We may elect to bypass the qualitative assessment in a period and proceed to perform the quantitative goodwill impairment test. We generally perform our impairment test using a combination of an income and a market approach to determine the fair value of goodwill. The income approach utilizes estimated discounted cash flows, while the market approach utilizes comparable company information.

During the IPR&D impairment review, we assess qualitative factors to determine whether it is more likely than not that the fair value of the IPR&D is less than the carrying amount. The qualitative factors include, but are not limited to, macroeconomic conditions, industry-specific conditions, and company-specific conditions. If, after assessing the totality of these qualitative factors, we determine that it is not more likely than not that the fair value of the IPR&D is less than the carrying amount, then no additional assessment is deemed necessary. Otherwise, we proceed to compare the estimated fair value of the IPR&D with the carrying value. If the carrying amount of the IPR&D exceeds the fair value, we record an impairment loss based on the difference. We may elect to bypass the qualitative assessment in a period and proceed to perform the quantitative impairment test.

Intangible Assets and Other Finite-Lived Assets

Finite-lived intangibles assets include our acquired developed technology and customer relationships. We capitalize finite-lived intangibles assets and generally amortize them on a straight-line basis over the estimated useful lives. Intangible assets purchased as part of an acquisition are included in Intangible assets, net, on our consolidated balance sheets.

We regularly review intangible assets with finite lives and other finite-lived assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. We assess the recoverability of assets based on the estimated undiscounted future cash flows expected to result from the use and eventual disposition of the asset. If the undiscounted future cash flows are less than the carrying amount, the asset is impaired. In light of the changes in circumstances that led to the recoverability assessment, we also assess the remaining estimated useful life of the assets. Factors that may indicate potential impairment include a significant decline in our stock price and market capitalization compared to net book value, significant changes in the ability of an asset to generate positive cash flows for our strategic business objectives, and the pattern of utilization of a particular asset.

In order to estimate the fair values of identifiable intangible assets with finite lives and other finite-lived assets, we estimate the present value of future cash flows from those assets. The key assumptions that we use in our 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. Management judgment is required to estimate the amount and timing of future cash flows and the relative risk of achieving those cash flows.

Revenue Recognition

Our revenue is generated primarily from the sale of products and services. Product revenue primarily consists of sales of our instruments and related consumables; service and other revenue consist primarily of revenue earned from product maintenance agreements.

We account for a contract with a customer when there is a legally enforceable contract between us and the customer, the rights of the parties are identified, the contract has commercial substance, and collectability of the contract consideration is probable. Revenues are recognized when control of the promised goods are transferred to our customers, or services are performed, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. Invoicing typically occurs upon shipment, or delivery in the case of an instrument, and payment is typically due within 30 days from invoice. In instances where the right to payment or transfer of title is contingent upon customer acceptance of the product, revenue is deferred until the acceptance criteria has been met. Revenue from instrument service contracts is recognized as the services are rendered, typically evenly over the contract term. Revenue from development agreements generally includes upfront and milestone payments. Revenue for these agreements is recognized when each distinct performance obligation is satisfied.

We may enter into, or periodically modify, contracts with customers that include a combination of promised products and services, resulting in arrangements containing multiple performance obligations. We determine whether each product or service is distinct, in order to identify the performance obligations in the contract and allocate the contract transaction price among the distinct performance obligations. 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. Therefore, instrument revenue is recognized upon transfer of control of the asset to the customer, which is generally upon delivery for sales made to our non-distributor customers and upon shipment for sales made to our distributor customers.

The consideration for contracts with multiple performance obligations is allocated between separate performance obligations based on their individual standalone selling price. We determine the best estimate of standalone selling price using historical average selling prices combined with an assessment of current market conditions. If the standalone selling price is not directly observable, we rely on estimates by considering multiple factors including, but not limited to, overall market conditions, including geographic or regional specific factors, internal costs, profit objectives, pricing practices, and other observable inputs. We recognize revenues as performance obligations are satisfied by transferring control of the product or service to the customer or over the term of a product maintenance agreement with a customer. Our revenue arrangements generally do not provide a right of return. Revenue is recorded net of discounts and sales taxes collected on behalf of governmental authorities. We update the transaction price for expected consideration, subject to constraint. Where we expect, at contract inception, the timing of payments to be consistent with the transfer of goods or services or the contract duration to be one year or less, we do not adjust the transaction price for the effects of a significant financing component

We periodically modify existing contracts with customers, which could change the scope or the price of the contract, or both. When a contract modification occurs, we exercise judgment to determine if the modification should be accounted for as: (i) a separate contract, (ii) the termination of the original contract and creation of a new contract, (iii) a cumulative catch-up adjustment to the original contract, or a combination thereof. Further, contract modifications require the identification and evaluation of the performance obligations of the modified contract, allocation of revenue to the remaining performance obligations and determination of the period of recognition for each identified performance obligation.

Certain of our agreements provide options to customers which can be exercised at a future date, such as the option to purchase our product at discounted prices, among others. In accounting for customer options, we determine whether an option is a material right and this may require us to exercise judgment. If a contract provides the customer an option to acquire additional goods or services at a discount that exceeds the range of discounts that we typically give for that product or service for the same class of customer, or if the option provides the customer certain additional goods or services for free, the option may be considered a material right and, therefore, a performance obligation. If the contract gives the customer the option to acquire additional goods or services at their normal standalone selling prices, we would likely determine that the option is not a material right and, therefore, account for it when the customer exercises the option. If the standalone selling price of the option is not directly observable, an estimated standalone selling price is utilized which considers adjustments for discounts that the customer could receive without exercising the option and the likelihood that the option will be exercised.

Additionally, we generally provide a one-year warranty on instruments. We accrue the cost of the assurance warranty when revenue of the instrument is recognized. Employee sales commissions are generally recorded as selling, general, and administrative expense when incurred as the amortization period for such costs, if capitalized, would have been one year or less.

Cost of Revenue

Cost of revenue reflects the direct cost of product components, third-party manufacturing services, and our internal manufacturing overhead and customer service infrastructure costs incurred to produce, deliver, maintain, and support our instruments, consumables, and services.

Manufacturing overhead is predominantly comprised of labor and facility costs. We capitalize manufacturing overhead into inventory based on a standard cost model that approximates actual costs.

Service costs include the direct costs of components used in support, repair and maintenance of customer instruments as well as the cost of personnel, materials, shipping and support infrastructure necessary to support our installed customer base.

Research and Development

Research and development expense consists primarily of expenses for personnel engaged in the development of our core technology, the design and development of our future products and current product enhancements. These expenses also include prototype-related expenditures, development equipment and supplies, partner development costs, facilities costs, and other related overhead. We expense research and development costs during the period in which the costs are incurred. We defer and capitalize non-refundable advance payments made for research and development activities until the related goods are received or the related services are rendered.

Credit Losses

Trade accounts receivable

The allowance for credit losses is based on our assessment of the collectability of customer accounts. We regularly review the allowance by considering factors such as the age of the accounts receivable balances, customer creditworthiness, customer industry, and current and forecasted economic conditions that may affect a customer's ability to pay. Credit loss expense was immaterial for the years ended December 31, 2024, 2023, and 2022.

Available-for-sale debt securities

Our investment portfolio contains investments in cash deposits, money market funds, commercial paper, corporate debt securities and U.S. government and agency securities. We regularly assess whether our securities in an unrealized loss position are credit related. The credit-related portion of unrealized losses, and any subsequent improvements, are recorded in interest income. Unrealized losses that are not credit related are included in accumulated other comprehensive income (loss). The unrealized losses on our investments are mainly attributable to government securities, including U.S. government and U.S. agency bond securities, impacted by movements in market rates and not due to issuer credit risk. We have the ability to hold and do not intend to sell the investments in unrealized loss positions before the recovery of their amortized cost bases.

Although we have historically not experienced significant credit losses, our exposure to credit losses may increase if our customers are adversely affected by changes in economic pressures or uncertainty associated with local or global economic recessions, disruptions associated with epidemics or pandemics, or other customer-specific factors.

Income Taxes

We account for income taxes under the asset and liability method, which requires, among other things, that deferred income taxes be provided for temporary differences between the tax bases of our assets and liabilities and the amounts reported in the financial statements. In addition, deferred tax assets are recorded for the future benefit of utilizing net operating losses and research and development credit carryforwards. The effect of a change in tax rates on the deferred tax assets and liabilities is recognized in the provision for income taxes in the period that includes the enactment date. A full valuation allowance is provided against our net deferred tax assets as it is more likely than not that the deferred tax assets will not be fully realized.

We regularly review our positions taken relative to income taxes. To the extent our tax positions are more likely than not going to result in additional taxes, we accrue the estimated amount of tax related to such uncertain positions.

Share-Based Compensation

We recognize share-based compensation expense for share-based payments, including stock options, restricted stock units, performance stock units and stock issued under our employee stock purchase plan ("ESPP") based on the grant-date fair value. We estimate the fair value of stock options and ESPP using an option-pricing model. See *Note 9. Stockholders' Equity* for further information regarding share-based compensation.

Other Comprehensive Income (Loss)

Other comprehensive income (loss) is comprised of unrealized gains (losses) on our investment securities.

Shipping and Handling

Costs related to shipping and handling are included in cost of revenues for all periods presented.

Earnings per Share

Basic net loss per share is computed by dividing net loss by the weighted-average number of shares of common stock outstanding during the period. Diluted net loss per share is computed by dividing diluted net loss by the weighted-average number of shares of common stock outstanding and potentially dilutive shares outstanding during the period. We calculate the potential dilutive effect of outstanding stock options, restricted stock units, and common stock issuable pursuant to our ESPP, using the treasury stock method. Potentially dilutive common shares issuable upon conversion of convertible senior notes are determined using the if-converted method.

Recent Accounting Pronouncements

Recently Adopted Accounting Standards

In November 2023, the FASB issued ASU 2023-07, *Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures.* This ASU improves segment disclosure requirements, primarily through enhanced disclosure requirements for significant segment expenses on an annual and interim basis. The improved disclosure requirements apply to all public entities that are required to report segment information, including those with only one reportable segment. The standard was effective for us beginning in fiscal year 2024 and interim periods within fiscal year 2025. We adopted this ASU for our fiscal year ending December 31, 2024 and applied the amendments retrospectively to all prior periods presented in the consolidated financial statements. There was no impact on the Company's reportable segments identified. Additional required disclosures have been included in *Note 11. Segment and Geographic Information*.

Accounting Pronouncements Pending Adoption

In November 2024, the FASB issued ASU 2024-04, *Debt—Debt With Conversion and Other Options (Subtopic 470-20): Induced Conversions of Convertible Debt Instruments*. This new standard clarifies the requirements for determining whether certain settlements of convertible debt instruments should be accounted for as an induced conversion or extinguishment of convertible debt. The standard will be effective for us beginning in the first quarter of fiscal year 2026, with early adoption permitted. The new standard is expected to be applied prospectively, but retrospective application is permitted. We are currently evaluating the impact of ASU 2024-04 on the consolidated financial statements and related disclosures.

In November 2024, the FASB issued ASU 2024-03, *Income Statement—Reporting Comprehensive Income—Expense Disaggregation Disclosures (Subtopic 220-40): Disaggregation of Income Statement Expenses*. This new standard requires a company to provide disaggregated disclosures, within the notes to the financial statements, of specified categories of expenses that are included in line items on the face of the income statement. The standard will be effective for us beginning in fiscal year 2027, and interim periods within fiscal year 2028, with early adoption permitted. The new standard is expected to be applied prospectively, but retrospective application is permitted. We are currently evaluating the impact of ASU 2024-03 on the consolidated financial statements and related disclosures.

In December 2023, the FASB issued ASU 2023-09, *Income Taxes (Topic 740): Improvements to Income Tax Disclosures*. This new standard requires a company to expand its existing income tax disclosures, specifically related to the rate reconciliation and income taxes paid. The standard will be effective for us beginning in fiscal year 2025, with early adoption permitted. The new standard is expected to be applied prospectively, but retrospective application is permitted. We are currently evaluating the impact of ASU 2023-09 on the consolidated financial statements and related disclosures.

NOTE 2. BUSINESS ACQUISITIONS

Apton Biosystems

On August 2, 2023, we acquired Apton Biosystems, Inc. (“Apton”), a California-based genomics company focused on developing a high throughput short-read sequencer using highly differentiated optics and image processing, paired with novel clustering and chemistry (the “Apton acquisition”).

In connection with the Apton acquisition, all outstanding equity securities of Apton were cancelled in exchange for shares of our common stock with a fair value of $76.6 million, cash of $0.2 million, and contingent consideration with an estimated fair value of $18.5 million. Excluded from consideration transferred was $1.3 million attributable to accelerated share-based compensation expense. The fair value of the 6,121,571 common shares issued was determined based on the closing market price of our common stock on the acquisition date.

In connection with the Apton acquisition, contingent consideration of $25.0 million, which we may elect to pay in cash, shares of our common stock or a combination of cash and shares of our common stock, is due upon the achievement of a milestone, defined as the achievement of $50.0 million in revenue associated with Apton's technology, provided that the milestone event occurs prior to the five-year anniversary of the closing date of the acquisition. At this time, the number of shares, if any, to be issued in connection with the achievement of the specified milestone is not known and will be calculated based on the daily volume-weighted average price of our common stock for the twenty trading days ending on and including the fifth trading day immediately prior to the occurrence of the specified milestone. Upon achievement of the milestone, we may pay cash in lieu of our common stock to ensure that the issuance of our common stock does not exceed 19.9% of our outstanding shares of common stock then outstanding.

The contingent consideration is accounted for as a liability at fair value, with changes during each reporting period recognized on our consolidated statements of operations and comprehensive loss. The fair value of the contingent consideration liability is calculated, with the assistance from a third-party valuation firm, using a Monte Carlo simulation to estimate the volatility and systematic relative risk of revenues subject to sales milestone payments and discounting the associated cash payment amounts to their present values using a credit-risk-adjusted interest rate.

The acquisition was accounted for as a business combination and, accordingly, the total fair value of the consideration transferred was allocated to the tangible and intangible assets acquired and liabilities assumed based on their fair values on the acquisition date. As of December 31, 2023, the major classes of assets and liabilities to which we have allocated the total fair value of the consideration transferred were as follows (in thousands):

Cash and cash equivalents	$ 97
In-process research and development	55,000
Goodwill	52,287
Other assets, current	153
Deferred income tax liability	(11,338)
Liabilities assumed	(2,191)
Total consideration transferred	$ 94,008

We have finalized the purchase price allocation for the Apton acquisition. There were no material adjustments from those amounts disclosed in our Annual Report on Form 10-K for the year ended December 31, 2023.

We incurred costs related to the Apton acquisition of approximately $9.0 million during the year ended December 31, 2023, which are included in merger-related expenses on our consolidated statement of operations and comprehensive loss. Merger-related expenses include $2.8 million relating to a liquidity event bonus plan that was treated as a separate transaction and included the issuance of 168,621 shares of common stock that were issued with a fair value of $2.1 million based on the closing market price of our common stock on the acquisition date. As a result, the total shares issued in connection with the Apton acquisition were 6.3 million shares of common stock.

The excess of the value of consideration paid over the aggregate fair value of those net assets has been recorded as goodwill. We recognized goodwill of $52.3 million, which is primarily attributable to the synergies expected to occur from the integration of Apton and is not deductible for income tax purposes. We allocated $55.0 million of the purchase price to acquired IPR&D. The fair value of the IPR&D was determined, with the assistance of a third-party valuation firm, using an income approach based on a forecast of expected future cash flows. Expected future cash flows utilize significant assumptions such as revenue projections and discount rate.

NOTE 3. FINANCIAL INSTRUMENTS

Fair Value of Financial Instruments

Fair value is the exchange price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

The fair value hierarchy established under GAAP requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The three levels of inputs that may be used to measure fair value are as follows:

- 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 in active markets for similar assets or liabilities, quoted prices for identical or similar assets or liabilities 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; and
- 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.

We consider an active market as one in which transactions for the asset or liability occurs with sufficient frequency and volume to provide pricing information on an ongoing basis. Conversely, we view an inactive market as one in which there are few transactions for the asset or liability, the prices are not current, or price quotations vary substantially either over time or among market makers. Where appropriate, our non-performance risk, or that of our counterparty, is considered in determining the fair values of liabilities and assets, respectively.

We classify our cash deposits and money market funds within Level 1 of the fair value hierarchy because they are valued using bank balances or quoted market prices. We classify our investments as Level 2 instruments based on market pricing and other observable inputs. We did not classify any of our investments within Level 3 of the fair value hierarchy.

Assets and liabilities measured at fair value are classified in their entirety based on the lowest level input that is significant to the fair value measurement. Our assessment of the significance of a particular input to the entire fair value measurement requires management to make judgments and consider factors specific to the asset or liability.

The carrying amount of our accounts receivable, prepaid expenses, other current assets, accounts payable, accrued expenses and other liabilities, current, approximate fair value due to their short maturities.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The following table sets forth the fair value of our financial assets and liabilities that were measured on a recurring basis:

	December 31, 2024				December 31, 2023			
(in thousands)	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Assets								
Cash and cash equivalents:								
Cash and money market funds	$ 55,370	$ —	$ —	$ 55,370	$ 70,172	$ —	$ —	$ 70,172
Commercial paper	—	—	—	—	—	—	—	—
U.S. government & agency securities	—	—	—	—	—	109,739	—	109,739
Total cash and cash equivalents	55,370	—	—	55,370	70,172	109,739	—	179,911
Investments:								
Commercial paper	—	—	—	—	—	9,947	—	9,947
Corporate debt securities	—	46,905	—	46,905	—	88,579	—	88,579
U.S. government & agency securities	—	287,656	—	287,656	—	352,979	—	352,979
Total investments	—	334,561	—	334,561	—	451,505	—	451,505
Short-term restricted cash	690	—	—	690	300	—	—	300
Long-term restricted cash	1,532	—	—	1,532	2,422	—	—	2,422
Total assets measured at fair value	$ 57,592	$ 334,561	$ —	$ 392,153	$ 72,894	$ 561,244	$ —	$ 634,138
Liabilities								
Contingent consideration - Apton acquisition	$ —	$ —	$ 18,700	$ 18,700	$ —	$ —	$ 19,550	$ 19,550
Total liabilities measured at fair value	$ —	$ —	$ 18,700	$ 18,700	$ —	$ —	$ 19,550	$ 19,550

For the year ended December 31, 2024, there were no transfers between Level 1, Level 2, or Level 3 assets or liabilities reported at fair value on a recurring basis and our valuation techniques did not change compared to the prior year.

Contingent Consideration - Apton

We classify contingent consideration, which was incurred in connection with the acquisition of Apton, within Level 3 as factors used to develop the estimate of fair value include unobservable inputs that are not supported by market activity and are significant to the fair value. Estimates and assumptions used in the Monte Carlo simulation include risk-adjusted forecasted revenues for products and services leveraging Apton's technology and an estimated credit spread.

We estimate the fair value of the contingent consideration liability based on the simulated revenue of the Company through the five-year anniversary of the closing date of the acquisition. As of December 31, 2024, the key input used in the determination of the fair value included projected revenues of the Company relating to the high-throughput short-read products and services leveraging Apton's technology. The assumptions used in our valuation are inherently subject to uncertainty. A decrease in the projected revenues would result in a decrease in the fair value of the liability. The discount rates used are the sum of the U.S. risk-free rate and the estimated subordinated credit spread for CCC+ credit rating, which ranges from 9.4% to 9.6%. Changes in our estimated subordinated credit spread can result in changes in the fair value of the contingent consideration liability, where a lower credit spread may result in an increased liability valuation.

Changes in the estimated fair value of the contingent consideration liability related to the Apton acquisition for the year ended December 31, 2024 were as follows:

(in thousands)	Level 3
Beginning balance as of December 31, 2023	$ 19,550
Change in estimated fair value	(850)
Ending balance as of December 31, 2024	$ 18,700

Changes to the fair value are recorded as the change in fair value of contingent consideration on our consolidated statement of operations and comprehensive loss.

Contingent Consideration - Omniome

On September 20, 2023, we achieved the commercial milestone in connection with the 2021 acquisition of Omniome. Consequently, former Omniome securityholders were entitled to receive as milestone consideration, among other things, an aggregate of approximately $100.9 million in cash and approximately 9.0 million shares of our common stock, representing $95.9 million divided by the volume-weighted average of the trading prices of our common stock for the twenty trading days ending with and including the trading day that was two days immediately prior to the achievement of the milestone. The $95.9 million represents the $100.0 million that was to be paid in shares of our common stock offset by $4.1 million attributable to stock options issued by PacBio in replacement of Omniome's unvested options as part of the transaction, pursuant to the terms of the Omniome merger agreement.

Following the achievement of the commercial milestone, $101.3 million of the contingent consideration, which includes certain payroll taxes, was paid during the year ended December 31, 2023. Additionally, 8,988,391 shares were issued at a value of $84.8 million to the former Omniome securityholders.

Cash, Cash Equivalents, Restricted Cash, and Investments

The following table summarizes our cash, cash equivalents, restricted cash, and investments:

(in thousands)	December 31, 2024 Amortized Cost	Gross unrealized gains	Gross unrealized losses	Fair Value
Cash and cash equivalents:				
Cash and money market funds	$ 55,370	$ —	$ —	$ 55,370
U.S. government & agency securities	—	—	—	—
Total cash and cash equivalents	55,370	—	—	55,370
Investments:				
Commercial paper	—	—	—	—
Corporate debt securities	46,746	184	(25)	46,905
U.S. government & agency securities	287,393	418	(155)	287,656
Total investments	334,139	602	(180)	334,561
Total cash, cash equivalents, and investments	$ 389,509	$ 602	$ (180)	$ 389,931
Short-term restricted cash	$ 690	$ —	$ —	$ 690
Long-term restricted cash	$ 1,532	$ —	$ —	$ 1,532

(in thousands)	December 31, 2023 Amortized Cost	Gross unrealized gains	Gross unrealized losses	Fair Value
Cash and cash equivalents:				
Cash and money market funds	$ 70,172	$ —	$ —	$ 70,172
Commercial paper	—	—	—	—
U.S. government & agency securities	109,786	13	(60)	109,739
Total cash and cash equivalents	179,958	13	(60)	179,911
Investments:				
Commercial paper	9,947	—	—	9,947
Corporate debt securities	88,263	373	(57)	88,579
U.S. government & agency securities	353,029	478	(528)	352,979
Total investments	451,239	851	(585)	451,505
Total cash, cash equivalents, and investments	$ 631,197	$ 864	$ (645)	$ 631,416
Short-term restricted cash	$ 300	$ —	$ —	$ 300
Long-term restricted cash	$ 2,422	$ —	$ —	$ 2,422

The following table summarizes the contractual maturities of our cash equivalents and available-for-sale investments, excluding money market funds, as of December 31, 2024:

(in thousands)	Fair Value
Due in one year or less	$ 238,957
Due after one year through 5 years	95,604
Total investments	$ 334,561

Actual maturities may differ from contractual maturities because issuers may have the right to call or prepay obligations without call or prepayment penalties.

Investment income included in other income, net on our consolidated statements of operations and comprehensive loss was $24.9 million and $32.8 million for the years ended December 31, 2024 and 2023, respectively.

NOTE 4. BALANCE SHEET COMPONENTS

Inventory, Net

Inventory, net, consisted of the following components:

	December 31,	
(in thousands)	2024	2023
Purchased materials	$ 45,270	$ 32,434
Work in process	22,172	27,653
Finished goods	14,081	15,746
Inventory, gross	81,523	75,833
Inventory reserve	(22,768)	(19,157)
Inventory, net	$ 58,755	$ 56,676

Property and Equipment, Net

Property and equipment, net, consisted of the following components:

	December 31,	
(in thousands)	2024	2023
Laboratory equipment and machinery	$ 47,273	$ 44,907
Leasehold improvements	33,770	35,226
Computer equipment	18,882	19,528
Software	7,280	6,628
Furniture and fixtures	2,972	3,594
Construction in progress	2,276	1,343
Total	112,453	111,226
Less: Accumulated depreciation	(81,948)	(74,794)
Property and equipment, net	$ 30,505	$ 36,432

Construction in progress consists of capitalizable costs that have been incurred for the construction of finite-lived assets and is primarily comprised of amounts that will be classified as lab equipment.

Depreciation expense during the years ended December 31, 2024, 2023, and 2022 was $13.8 million, $11.5 million, and $9.5 million, respectively.

In connection with the interim impairment test of goodwill in the second and fourth quarter of 2024, we also performed a recoverability test for the definite-lived asset group, which includes property and equipment, noting no impairment.

Goodwill and Intangible Assets

Goodwill

Goodwill is reviewed for impairment at least annually as of the first day of the second quarter, or more frequently if an event occurs indicating impairment. We performed our annual assessment for goodwill impairment, noting no impairment. Based primarily on the sustained decrease in our stock price during the second quarter and overall market capitalization as of the end of the second quarter of 2024 as well as other factors, we concluded that there was an indicator that it was more likely than not that the fair value of the reporting unit was less than its carrying amount that required an interim impairment test be performed on goodwill. As a result of the interim impairment test performed as of June 30, 2024, we concluded that the carrying amount of the entity-level reporting unit exceeded fair value and recorded $93.2 million of goodwill impairment. The impairment charge is included on our consolidated statements of operations and comprehensive loss for the year ended December 31, 2024.

The decline in the fair value of the reporting unit below its carrying value as of June 30, 2024 resulted primarily from the decline in our stock price and changes in the timing of expected future cash flows as compared to our initial long-term plan, due to continued impact of longer than expected median sales cycles resulting from various factors. We performed our impairment test using a combination of an income and a market approach to determine the fair value of the reporting unit. The income approach utilized estimated discounted cash flows, while the market approach utilized comparable company information. Significant assumptions used in the income approach included revenue growth expectations and a selected discount rate of 12.0%. The discount rate was based on the weighted average cost of capital, determined using market, peer company, industry data, and related risk factors. The assessment is a level 3 fair value measurement due to its reliance on certain unobservable inputs and significant management judgment. The assumptions used were inherently subject to uncertainty and small changes in these assumptions could have had a significant impact on the concluded value. An increase of 100 basis points to the discount rate used in our assessment would have resulted in additional goodwill impairment of approximately $85 million. The assessed fair value was deemed reasonable based on a market capitalization reconciliation and a supportable control premium.

As of the end of the fourth quarter of 2024, we concluded that the significant increase in the carrying value of the reporting unit resulting primarily from the debt restructuring during the quarter and changes in the timing and amount of expected future cash flows due to macroeconomic headwinds, among other factors, indicated that it was more likely than not that the fair value of the reporting unit was less than its carrying amount that required an interim impairment test be performed on goodwill. As a result of the impairment test performed as of December 31, 2024, we concluded that the carrying amount of the entity-level reporting unit exceeded fair value and recorded $51.3 million of goodwill impairment. The impairment charge is included on our consolidated statements of operations and comprehensive loss for the year ended December 31, 2024.

We performed our impairment test consistent with the approach used to determine the fair value of the reporting unit in the second quarter of 2024. Significant assumptions used in the income approach included revenue growth expectations and a selected discount rate of 12.0%. The assessment is a Level 3 fair value measurement due to its reliance on certain unobservable inputs and significant management judgment. The assumptions used were inherently subject to uncertainty and small changes in these assumptions could have had a significant impact on the concluded value. An increase of 100 basis points to the discount rate used in our assessment would have resulted in additional goodwill impairment of approximately $95 million. The assessed fair value was deemed reasonable based on a market capitalization reconciliation.

As a result of the impairments, the carrying value of goodwill now approximates fair value. Changes in our future operating results, cash flows, share price, market capitalization or discount rates, among others, used when conducting future goodwill impairment tests could affect the estimated implied fair value of goodwill and may result in additional impairment charges in the future.

Changes to goodwill during the year ended December 31, 2024 were as follows:

(in thousands)		
Balance as of December 31, 2023	$	462,261
Impairment charges		(144,500)
Balance as of December 31, 2024	$	317,761

Intangible Assets

Intangible assets include developed technology, customer relationships, and acquired IPR&D.

As a result of the Apton acquisition in August 2023, we allocated $55.0 million of the purchase price to IPR&D. As of December 31, 2024, the research and development project had not been completed or abandoned and, therefore, the IPR&D is not currently subject to amortization. During the year ended December 31, 2023, acquired IPR&D of $400.0 million as a result of the Omniome acquisition in September 2021 was completed and became subject to amortization.

IPR&D is reviewed for impairment at least annually, or more frequently if an event occurs indicating the potential for impairment. Based on the interim impairment test of goodwill in the second quarter of 2024 and our annual IPR&D impairment assessment in the third quarter of 2024, no impairment of IPR&D was identified.

As of the end of the fourth quarter of 2024, we concluded that due to significant macroeconomic uncertainties and the related changes in the timing and amount of expected future cash flows, among other factors, it was more likely than not that the fair value of the IPR&D was less than its carrying amount that required an interim impairment test be performed on IPR&D. We performed our impairment test by comparing the carrying value of the IPR&D to its estimated fair value, which was determined by the income approach, using a discounted cash flow model. Significant estimates and assumptions used in the income approach, which represent a Level 3 fair value measurement, include revenue growth assumptions, a selected discount rate of 14.0%, and a selected obsolescence factor of 13 years. The discount rate was based primarily on the weighted average cost of capital, determined using market, peer company, industry data, and related risk factors. Based on our analysis, the carrying value of the IPR&D exceeded its estimated fair value, and we recorded an impairment of $40.0 million in the fourth quarter of 2024. The impairment charge is included on our consolidated statements of operations and comprehensive loss for the year ended December 31, 2024.

The assumptions used were inherently subject to uncertainty and small changes in these assumptions could have had a significant impact on the concluded value. An increase of 100 basis points to the discount rate used in our analysis would have resulted in additional IPR&D impairment of approximately $5 million. A decrease of one year to the obsolescence factor used in our analysis would have resulted in additional IPR&D impairment of approximately $5 million. We also performed a recoverability test for the definite-lived asset group, which includes developed technology, noting no impairment.

As a result of the impairment, the carrying value of the IPR&D now approximates fair value. Changes in macroeconomic conditions, industry-specific conditions and company-specific conditions may impact the estimates and assumptions used when conducting future IPR&D impairment tests. These changes could affect the estimated fair value of the IPR&D and may result in additional impairment charges in the future.

Changes to IPR&D during the year ended December 31, 2024 were as follows:

(in thousands)	
Balance as of December 31, 2023	$ 55,000
Impairment charge	(40,000)
Balance as of December 31, 2024	$ 15,000

In addition to IPR&D, we had the following acquired finite-lived intangible assets as of December 31, 2024:

(in thousands, except years)	Estimated Useful Life (in years)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Developed technology	15	$ 411,179	$ (36,607)	$ 374,572
Customer relationships	2	360	(360)	—
Total		$ 411,539	$ (36,967)	$ 374,572

Amortization expense of intangibles was $27.4 million, $8.3 million and $0.9 million for the years ended December 31, 2024, 2023, and 2022, respectively. For the years ended December 31, 2024, 2023, and 2022 amortization expense of intangibles in cost of revenue was $9.4 million, $2.0 million, and $0.7 million, respectively. For the years ended December 31, 2024, 2023, and 2022, amortization expense of intangibles in operating expenses was $18.0 million, $6.3 million, and $0.2 million, respectively.

Amortization of acquired intangible assets is included within our cost of revenue if the costs and expenses related to the intangible assets are attributable to revenue generating activities. Amortization expense for intangible assets that are not directly related to sales generating activities are amortized to operating expenses. For developed technology intangible assets that are utilized in both revenue generating activities and in research and development activities, we allocate the amortization expense between cost of revenue and operating expenses. The finite-lived intangible assets are amortized using the straight-line method over their estimated useful lives.

The estimated future amortization expense of acquisition-related intangible assets with finite lives is estimated as follows:

(in thousands)	
2025	$ 27,412
2026	27,412
2027	27,412
2028	27,412
2029	27,412
2030 and thereafter	237,512
Total	$ 374,572

Accrued Expenses

Accrued expenses consisted of the following components:

	December 31,	
(in thousands)	2024	2023
Salaries and benefits	$ 11,706	$ 29,337
Accrued interest payable	2,470	2,834
Accrued purchase commitments	—	2,613
Accrued product development costs	1,111	1,033
Accrued professional services and legal fees	824	2,641
Inventory accrual	1,237	353
Warranty accrual	3,100	4,681
Other	2,147	2,216
Accrued expenses	$ 22,595	$ 45,708

Product Warranties

We generally provide a one-year warranty on instruments. In addition, we provide a limited warranty on consumables. At the time revenue is recognized, an accrual is established for estimated warranty costs 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. Warranties are recorded as part of accrued expenses on our consolidated balance sheets and warranty expense is recorded as a component of cost of product revenue on our consolidated statements of operations and comprehensive loss. There were no material changes in estimates for the periods presented below.

Changes in the reserve for product warranties were as follows:

(in thousands)	Years Ended December 31, 2024	2023
Balance at beginning of period	$ 4,681	$ 1,651
Additions charged to cost of product revenue	6,144	8,227
Repairs and replacements	(7,725)	(5,197)
Balance at end of period	$ 3,100	$ 4,681

Deferred Revenue

As of December 31, 2024, we had a total of $19.8 million of deferred revenue, $13.9 million of which was recorded as deferred revenue, current and $5.9 million of which was recorded as deferred revenue, non-current, which primarily relates to deferred service contract revenues and is scheduled to be recognized in the next five years. Revenue recorded in the year ended December 31, 2024 includes $14.9 million that was included in deferred revenue, current as of December 31, 2023.

Performance Obligations

We regularly enter into contracts with multiple performance obligations. These contracts are believed to be firm as of the balance sheet date. However, we may allow customers to make product substitutions or certain modifications at our discretion. The timing of shipments depends on several factors, including agreed upon shipping schedules, which may span multiple quarters. Most performance obligations are generally satisfied within a year of the contract execution date. As of December 31, 2024, the aggregate amount of the transaction price allocated to remaining performance obligations was $58.6 million, of which approximately 62% is expected to be converted to revenue in 2025, approximately 30% in the following twelve months, and the remainder thereafter.

Other Liabilities, Current

Other liabilities, current, consisted of the following components:

(in thousands)	December 31, 2024	2023
Accrued Employee Stock Purchase Plan	$ 2,014	$ 3,715
Short-term loan	—	490
Other	1,210	4,121
Other liabilities, current	$ 3,224	$ 8,326

NOTE 5. CONVERTIBLE SENIOR NOTES

2029 Convertible Senior Notes

On November 7, 2024, we entered into an exchange agreement with SB Northstar LP ("SBN"), a subsidiary of SoftBank Group Corp., pursuant to which we have agreed to exchange the remaining approximately $459.0 million in aggregate principal amount of 2028 Notes outstanding for (i) $200.0 million aggregate principal amount of 1.50% Convertible Senior Notes due 2029 (the "2029 Notes"), (ii) 20,451,570 shares of common stock (the "Exchange Shares") and (iii) $50.0 million of cash (the "2024 Exchange Transaction"). The Exchange Shares were issued on November 21, 2024 (the "Closing Date"). The 2029 Notes, the Exchange Shares, and shares of common stock issuable upon conversion of the 2029 Notes are subject to certain lock-up restrictions for a six-month period (the "Lock-Up Period") beginning on the Closing Date of the 2024 Exchange Transaction; the lock-up restrictions will terminate immediately prior to the consummation of any change in control of the Company.

Upon any conversion of the 2029 Notes, SBN will not be entitled to be issued a number of shares of the Company's common stock which would cause SBN's beneficial ownership of common stock to exceed either 9.9% of the total number of issued and outstanding shares of common stock or 9.9% of the combined voting power of all of the securities of the Company, in each case, following such conversion.

The 2029 Notes are governed by an indenture (the "2029 Indenture") between the Company and U.S. Bank Trust Company, National Association, as trustee. The 2029 Notes bear interest at a rate of 1.50% per annum. Interest on the 2029 Notes is payable semi-annually in arrears on February 15 and August 15 and commencing on February 15, 2025. The 2029 Notes will mature on August 15, 2029, subject to earlier conversion, redemption or repurchase.

The 2029 Notes are convertible at the option of the holder at any time from the expiration of the Lock-Up Period until the second scheduled trading day prior to the maturity date, including in connection with a redemption by the Company. The 2029 Notes are convertible into shares of our common stock based on an initial conversion rate of 204.5157 shares of common stock per $1,000 principal amount of the 2029 Notes (which is equal to an initial conversion price of approximately $4.89 per share of common stock), in each case subject to customary anti-dilution and other adjustments as a result of certain extraordinary transactions. Upon conversion of the 2029 Notes, we may elect to settle such conversion obligation in cash, shares of our common stock, or a combination of cash and shares of our common stock.

On or after August 20, 2027, and prior to the 31st scheduled trading day immediately preceding the maturity date, the 2029 Notes will be redeemable by the Company in the event that the closing sale price of our common stock has been at least 150% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide the redemption notice at a redemption price of 100% of the principal amount of such 2029 Notes, plus accrued and unpaid interest up to, but excluding, the redemption date.

Upon the occurrence of a Fundamental Change (as defined in the 2029 Indenture), the holders of the 2029 Notes may require that we repurchase all or part of the principal amount of the 2029 Notes at a purchase price of par plus unpaid interest up to, but excluding, the maturity date.

The 2029 Notes are subject to certain debt and lien covenants as well as springing guarantees, in each case, the terms of which are set forth in a second letter agreement between the Company and SBN entered into in connection with the Indenture.

The 2029 Indenture includes customary "events of default," which may result in the acceleration of the maturity of the 2029 Notes under the 2029 Indenture. The 2029 Indenture also includes customary covenants for convertible notes of this type.

To the extent we elect, the sole remedy for an event of default relating to our failure to comply with certain of our reporting obligations shall, for the first 360 calendar days after the occurrence of such an event of default, consist exclusively of the right to receive additional interest on the 2029 Notes at a rate equal to (i) 0.25% per annum of the principal amount of the 2029 Notes outstanding for each day during the first 180 calendar days of the 360-day period after the occurrence of such an event of default during which such event of default is continuing (or, if earlier, the date on which such event of default is cured or waived) and (ii) 0.50% per annum of the principal amount of the 2029 Notes outstanding for each day from, and including, the 181st calendar day to, and including, the 360th calendar day after the occurrence of such an event of default during which such event of default is continuing (or, if earlier, the date on which such event of default is cured or waived as provided for in the 2029 Indenture). On the 361st day after such event of default (if the event of default relating to our failure to comply with its obligations is not cured or waived prior to such 361st day), the 2029 Notes shall be subject to acceleration as provided for in the 2029 Indenture.

The 2029 Notes are accounted for in accordance with the authoritative guidance for convertible debt instruments that may be settled in cash upon conversion. Under ASU 2020-06, the guidance requires that debt with an embedded conversion feature is accounted for in its entirety as a liability and no portion of the proceeds from the issuance of the convertible debt instrument is accounted for as attributable to the conversion feature unless the conversion feature is required to be accounted for separately as an embedded derivative or the conversion feature results in a substantial premium. The conversion feature of the 2029 Notes is not accounted for as an embedded derivative because it is considered to be indexed to our common stock, and the 2029 Notes were not issued at a substantial premium; therefore, the 2029 Notes are accounted for in their entirety as a liability. Because we may elect to settle any conversions entirely in shares, and because settlement in shares is the default settlement method, the liability is classified as non-current.

The requirement to repurchase the 2029 Notes, including unpaid interest to the maturity date in the event of a Fundamental Change, is considered a put option for certain periods requiring bifurcation under ASC 815 – *Derivatives and Hedging.* However, given the low probability of such a Fundamental Change occurring during the applicable periods, the value of the embedded derivative is immaterial.

The additional interest feature in the event of our failure to comply with certain reporting obligations is also considered an embedded derivative requiring bifurcation under ASC 815. However, due to the nature and terms of the reporting obligations, the value of the embedded derivative is immaterial.

The exchange qualified as a troubled debt restructuring under ASC 470-60 – *Troubled Debt Restructurings by Debtors*. Since the undiscounted cash flows of the 2029 Notes were less than the carrying amount of the exchanged 2028 Notes, the carrying value of the 2029 Notes was determined based on the total undiscounted cash flows. As a result, no interest expense will be recognized for the 2029 Notes. The Company recorded a gain on debt restructuring of $154.4 million, which resulted in a decrease of basic net loss per share of $0.56, during the year ended December 31, 2024 on our consolidated statements of operations and comprehensive loss. The gain was calculated as the difference between the carrying amount of the old debt and the carrying amount of the new debt, adjusted for debt issuance costs.

We incurred issuance costs related to the 2029 Notes of approximately $3.1 million, including $0.2 million of lender fees, which were recorded as a reduction to the gain on debt restructuring on our consolidated statements of operations and comprehensive loss. We also paid accrued but unpaid interest of $1.8 million on the 2028 Notes in connection with the 2024 Exchange Transaction.

We did not receive any cash proceeds from the 2024 Exchange Transaction. In exchange for issuing the 2029 Notes, Exchange Shares and paying $50.0 million of cash pursuant to the 2024 Exchange Transaction, we received and cancelled the exchanged 2028 Notes. Following the closing of the 2024 Exchange Transaction, no amounts were outstanding on the 2028 Notes.

The carrying amount of the liability for the 2029 Notes as of December 31, 2024 is $214.2 million, of which $212.0 million is included as convertible senior notes, net, non-current, and $2.2 million is included as accrued expenses on our consolidated balance sheets.

As of December 31, 2024, the estimated fair value (Level 2) of the 2029 Notes was $175.0 million. The fair value of the 2029 Notes is estimated using a binomial lattice model that is primarily affected by the trading price of our common stock, market interest rates and volatility.

2030 Convertible Senior Notes

In June 2023, we entered into a privately negotiated exchange agreement with a holder of our outstanding 1.50% Convertible Senior Notes due 2028 (the "2028 Notes"), pursuant to which we issued $441.0 million in aggregate principal amount of our 1.375% Convertible Senior Notes due 2030 (the "2030 Notes" and together with the 2029 Notes, the "Notes") in exchange for $441.0 million principal amount of the 2028 Notes (the "2023 Exchange Transaction"), pursuant to exemptions from registration under the Securities Act of 1933, as amended, and the rules and regulations thereunder. The 2030 Notes were issued on June 30, 2023.

The 2030 Notes are governed by an indenture (the "2030 Indenture") between the Company and U.S. Bank Trust Company, National Association, as trustee. The 2030 Notes bear interest at a rate of 1.375% per annum. Interest on the 2030 Notes is payable semi-annually in arrears on June 15 and December 15, commencing on December 15, 2023. The 2030 Notes will mature on December 15, 2030, subject to earlier conversion, redemption or repurchase.

The 2030 Notes are convertible at the option of the holder at any time until the second scheduled trading day prior to the maturity date, including in connection with a redemption by the Company. The 2030 Notes are convertible into shares of our common stock based on an initial conversion rate of 46.5116 shares of common stock per $1,000 principal amount of the 2030 Notes (which is equal to an initial conversion price of approximately $21.50 per share of common stock), in each case subject to customary anti-dilution and other adjustments as a result of certain extraordinary transactions. Upon conversion of the 2030 Notes, we may elect to settle such conversion obligation in cash, shares of our common stock, or a combination of cash and shares of our common stock.

On or after June 20, 2028, and prior to the 31st scheduled trading day immediately preceding the maturity date, the 2030 Notes will be redeemable by the Company in the event that the closing sale price of our common stock has been at least 150% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide the redemption notice at a redemption price of 100% of the principal amount of such 2030 Notes, plus accrued and unpaid interest up to, but excluding, the redemption date.

Upon the occurrence of a Fundamental Change (as defined in the 2030 Indenture), the holders of the 2030 Notes may require that we repurchase all or part of the principal amount of the 2030 Notes at a purchase price equal to 100% of the principal amount of the notes to be repurchased, plus any accrued and unpaid interest up to, but excluding, the fundamental change repurchase date, and all unpaid interest from the fundamental change repurchase date thereon, but excluding, the maturity date.

The 2030 Indenture includes customary "events of default," which may result in the acceleration of the maturity of the 2030 Notes under the 2030 Indenture. The 2030 Indenture also includes customary covenants for convertible notes of this type.

To the extent we elect, the sole remedy for an event of default relating to our failure to comply with certain of our reporting obligations shall, for the first 360 calendar days after the occurrence of such an event of default, consist exclusively of the right to receive additional interest on the 2030 Notes at a rate equal to (i) 0.25% per annum of the principal amount of the 2030 Notes outstanding for each day during the first 180 calendar days of the 360-day period after the occurrence of such an event of default during which such event of default is continuing (or, if earlier, the date on which such event of default is cured or waived) and (ii) 0.50% per annum of the principal amount of the 2030 Notes outstanding for each day from, and including, the 181st calendar day to, and including, the 360th calendar day after the occurrence of such an event of default during which such event of default is continuing (or, if earlier, the date on which such event of default is cured or waived as provided for in the 2030 Indenture). On the 361st day after such event of default (if the event of default relating to our failure to comply with its obligations is not cured or waived prior to such 361st day), the 2030 Notes shall be subject to acceleration as provided for in the 2030 Indenture.

The 2030 Notes are accounted for in accordance with the authoritative guidance for convertible debt instruments that may be settled in cash upon conversion. Under ASU 2020-06, the guidance requires that debt with an embedded conversion feature is accounted for in its entirety as a liability and no portion of the proceeds from the issuance of the convertible debt instrument is accounted for as attributable to the conversion feature unless the conversion feature is required to be accounted for separately as an embedded derivative or the conversion feature results in a substantial premium. The conversion feature of the 2030 Notes is not accounted for as an embedded derivative because it is considered to be indexed to our common stock, and the 2030 Notes were not issued at a substantial premium; therefore, the 2030 Notes are accounted for in their entirety as a liability. Because we may elect to settle any conversions entirely in shares, and because settlement in shares is the default settlement method, the liability is classified as non-current.

The requirement to repurchase the 2030 Notes, including unpaid interest to the maturity date in the event of a Fundamental Change, is considered a put option for certain periods requiring bifurcation under ASC 815 – *Derivatives and Hedging.* However, given the low probability of such a Fundamental Change occurring during the applicable periods, the value of the embedded derivative is immaterial.

The additional interest feature in the event of our failure to comply with certain reporting obligations is also considered an embedded derivative requiring bifurcation under ASC 815. However, due to the nature and terms of the reporting obligations, the value of the embedded derivative is immaterial.

The 2023 Exchange Transaction was accounted for as an extinguishment driven by the change in fair value of the embedded conversion option. We recorded a loss on extinguishment of debt of approximately $2.0 million in connection with the 2023 Exchange Transaction during the year ended December 31, 2023, which represents the difference between the fair value and the principal amount of the 2030 Notes of the debt at the modification date, plus unamortized debt issuance costs of $1.5 million related to the respective portion of the 2028 Notes.

We incurred issuance costs related to the 2030 Notes of approximately $7.3 million, which were recorded as debt issuance costs and are presented as a reduction to the 2030 Notes on our consolidated balance sheets. The debt issuance costs are amortized to interest expense using the effective interest method over the term of the 2030 Notes, resulting in an effective interest rate of 1.6%. We also paid accrued but unpaid interest of $2.5 million on the 2028 Notes in connection with the 2023 Exchange Transaction on June 30, 2023.

We did not receive any cash proceeds from the 2023 Exchange Transaction. In exchange for issuing the 2030 Notes pursuant to the 2023 Exchange Transaction, we received and cancelled the exchanged 2028 Notes. Following the closing of the 2023 Exchange Transaction, $459.0 million in aggregate principal amount of 2028 Notes remained outstanding with terms unchanged.

The net carrying amount of the liability for the 2030 Notes is included as convertible senior notes, net, non-current on our consolidated balance sheets as follows:

	December 31,	
(in thousands)	2024	2023
Principal amount	$ 441,000	$ 441,000
Unamortized debt premium	453	524
Unamortized debt issuance costs	(5,959)	(6,907)
Net carrying amount	$ 435,494	$ 434,617

Interest expense for the 2030 Notes for the years ended December 31, 2024, 2023, and 2022 was as follows:

	Years Ended December 31,		
(in thousands)	2024	2023	2022
Contractual interest expense	$ 6,081	$ 3,032	$ —
Amortization of debt issuance costs	950	463	—
Total interest expense	$ 7,031	$ 3,495	$ —

As of December 31, 2024, the estimated fair value (Level 2) of the 2030 Notes was $293.9 million. The fair value of the 2030 Notes is estimated using a binomial lattice model that is primarily affected by the trading price of our common stock, market interest rates and volatility.

2028 Convertible Senior Notes

On February 9, 2021, we entered into an investment agreement with SBN relating to the issuance and sale to SBN of $900.0 million in aggregate principal amount of the 2028 Notes. The 2028 Notes were issued on February 16, 2021 and bore interest at a rate of 1.50% per annum. As discussed above, in June 2023 we completed an exchange of $441.0 million in aggregate principal amount of our 2028 Notes for $441.0 million aggregate principal amount of the 2030 Notes, leaving approximately $459.0 million in aggregate principal amount of 2028 Notes outstanding. Also as discussed above, in November 2024 we completed an exchange of the remaining $459.0 million in aggregate principal amount of the 2028 Notes outstanding for (i) $200.0 million aggregate principal amount of the 2029 Notes, (ii) the Exchange Shares and (iii) $50.0 million of cash. As of December 31, 2024 no amounts were outstanding on the 2028 Notes.

We incurred issuance costs related to the 2028 Notes of approximately $4.5 million, which were recorded as debt issuance costs and are presented as a reduction to the 2028 Notes on our consolidated balance sheets. The debt issuance costs were amortized to interest expense using the effective interest method over the term of the 2028 Notes, resulting in an effective interest rate of 1.6%. In connection with the 2024 Exchange Transaction, the remaining unamortized debt issuance costs related to the 2028 Notes of $1.1 million were extinguished by offsetting the carrying amount of the convertible senior notes.

The net carrying amount of the liability for the 2028 Notes is included as convertible senior notes, net, non-current on our consolidated balance sheets as follows:

	December 31,	
(in thousands)	2024	2023
Principal amount	$ —	$ 459,000
Unamortized debt issuance costs	—	(1,374)
Net carrying amount	$ —	$ 457,626

Interest expense for the 2028 Notes was as follows for the years ended December 31, 2024, 2023, and 2022:

	Years Ended December 31,		
(in thousands)	2024	2023	2022
Contractual interest expense	$ 6,139	$ 10,133	$ 13,500
Amortization of debt issuance costs	289	472	617
Total interest expense	$ 6,428	$ 10,605	$ 14,117

NOTE 6. RESTRUCTURING

During the year ended December 31, 2024, we implemented an expense reduction initiative that included workforce reductions, the closing of our San Diego office, and other actions to reduce annualized run-rate operating expenses.

A summary of the pre-tax restructuring charges are as follows:

(in thousands)	Year Ended December 31, 2024	Cumulative amount incurred to date
Employee separation costs	$ 10,008	$ 10,008
Other costs	15,214	15,214
Total restructuring charges[1]	$ 25,222	$ 25,222

[1] For the year ended December 31, 2024, cumulative charges incurred to date include $14.9 million in sales, general and administrative expense; $5.9 million in research and development expense; and $4.4 million in cost of revenue.

Cumulative charges incurred to date include employee separation costs comprised of approximately $5.5 million related to salaries, wages and other employee benefits paid to terminated employees pursuant to the Worker Adjustment and Retraining Notification (WARN) Act and approximately $4.5 million of severance costs.

Other costs in the year ended December 31, 2024 are primarily related to accelerated amortization and depreciation of $8.1 million for the right-of-use asset, leasehold improvements, and furniture and fixtures relating to the abandonment of the San Diego office. We also incurred cumulative charges to date for excess inventory of $3.6 million primarily relating to a decrease in internal demand resulting from the expense reduction initiatives which were recognized in cost of product revenues. The accelerated amortization and depreciation, which was recognized in sales, general and administrative expense, was determined as a result of the Company's change in estimate pertaining to its remaining useful life of the San Diego office utilizing the estimated date on which it planned to abandon the San Diego office. The lease liability pertaining to the San Diego office was also remeasured during the year ended December 31, 2024 resulting in a reduction in the operating lease liability balance of $4.4 million, which was offset against the right-of-use asset on our consolidated balance sheets. We exited our San Diego office in September 2024.

A summary of the liabilities related to the restructuring is as follows:

(in thousands)	Employee Separation Costs	Other Costs	Total
Expense recorded in YTD 2024	$ 10,008	$ 2,816	$ 12,824
Cash paid during YTD 2024	(10,008)	(2,646)	(12,654)
Amount recorded in current liabilities as of December 31, 2024	$ —	$ 170	$ 170
Estimated total restructuring costs to still be incurred	$ —	$ 946	$ 946

The table above excludes noncash activities and amounts incurred relating to the San Diego office lease liability. The ending balance of the San Diego office lease liability as of December 31, 2024 is $2.6 million, and is included in operating lease liabilities, current on our consolidated balance sheets.

The other restructuring costs are expected to be incurred and paid by the end of 2025.

NOTE 7. COMMITMENTS AND CONTINGENCIES

Leases

We record operating lease right-of-use assets and liabilities on our consolidated balance sheets for all leases with a term of more than 12 months. The operating lease right-of-use assets and liabilities are calculated as the present value of remaining minimum lease payments over the remaining lease term using our estimated secured incremental borrowing rates at the commencement date. Lease payments included in the measurement of the lease liability comprise the fixed rent per the term of the Lease. All of our leases are operating leases. Lease payments comprise the base rent per the term of the lease. Lease expense for these leases is recognized on a straight-line basis over the lease term, with variable lease payments, such as common area maintenance fees, recognized in the period those payments are incurred.

We often have options to renew lease terms for buildings. In addition, certain lease arrangements may be terminated prior to their original expiration date at our discretion. We evaluate renewal and termination options at the lease commencement date to determine if we are reasonably certain to exercise the option on the basis of economic factors.

As of December 31, 2024, the maturities of our operating lease liabilities were as follows:

(in thousands)	
2025	$ 11,481
2026	8,780
2027	7,110
2028	—
2029	—
Thereafter	—
Total undiscounted operating lease payments	27,371
Less: imputed interest	(2,431)
Present value of operating lease liabilities	$ 24,940

Balance Sheet Classification	
Operating lease liabilities, current	$ 10,026
Operating lease liabilities, non-current	14,914
Total operating lease liabilities	$ 24,940

We use our incremental borrowing rate to determine the present value of lease payments, as the implicit rates in our leases are not readily determinable. The weighted-average discount rate used to measure our operating lease liabilities was 7.7%. The weighted-average remaining lease term for our operating leases as of December 31, 2024 was 2.7 years.

Cash Flows

Cash paid for amounts included in the present value of operating lease liabilities was $14.2 million and $12.1 million for the years ended December 31, 2024 and 2023, respectively, and were included in operating cash flows.

Operating Lease Costs

Operating lease costs were $14.5 million and $10.4 million for the years ended December 31, 2024 and 2023, respectively.

Contingencies

We may become involved in legal proceedings, claims and assessments from time to time in the ordinary course of business. We accrue liabilities for such matters when it is probable that future expenditures will be made and such expenditures can be reasonably estimated.

We do not believe that the ultimate outcome of any such pending matters is probable or reasonably estimable, or that these matters will have a material adverse effect on our business; however, the results of litigation and claims are inherently unpredictable. Regardless of the outcome, litigation can have an adverse impact on us because of litigation and settlement costs, diversion of management resources, and other factors.

Please see subsection titled *Legal Proceedings*, in Part I, Item 3 of this Annual Report on Form 10-K.

Indemnification

Pursuant to Delaware law and agreements entered into with each of our directors and officers, we may have obligations, under certain circumstances, to hold harmless and indemnify each of our directors and officers against losses suffered or incurred by the indemnified party in connection with their service to us, and judgements, fines, settlements and expenses related to claims arising against such directors and officers to the fullest extent permitted under Delaware law, our bylaws and our certificate of incorporation. We also enter and have entered into indemnification agreements with our directors and officers that may require us to indemnify them against liabilities that arise by reason of their status or service as directors or officers, except as prohibited by applicable law. In addition, we may have obligations to hold harmless and indemnify third parties involved with our fundraising efforts and their respective affiliates, directors, officers, employees, agents or other representatives against any and all losses, claims, damages and liabilities related to claims arising against such parties pursuant to the terms of agreements entered into between such third parties and us in connection with such fundraising efforts. To the extent that any such indemnification obligations apply to the lawsuits described above, any associated expenses incurred are included within the related accrued litigation expense amounts. No additional liability associated with such indemnification obligations has been recorded as of December 31, 2024.

Purchase Commitments

In the normal course of business, we enter into agreements to purchase goods or services or license intellectual property, certain of which are not cancellable without penalty. 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 ongoing minimum royalty payments, some of which are subject to adjustment, may be terminated under certain circumstances.

Our purchase orders and contractual obligations are approximately $57.6 million as of December 31, 2024, which consist of open purchase orders and contractual obligations in the ordinary course of business, including commitments with contract manufacturers and suppliers for which we have not received the goods or services. A majority of these purchase obligations are due within a year. Although open purchase orders are considered enforceable and legally binding, the terms generally allow us the option to cancel, reschedule and adjust our requirements based on our business needs prior to the delivery of goods or performance of services.

We recognized a loss on purchase commitment of $1.0 million for the year ended December 31, 2024, which was recorded as part of accrued expenses on our consolidated balance sheet and is included in the aforementioned purchase orders and contractual obligations amount. The purchase commitment loss is based on an estimate of future excess inventory related to supply agreements with third-party vendors, for which we do not expect to have related sales.

We have a long-term supply agreement, which was most recently amended in September 2024 (the “Supply Agreement”), for the purchase of certain products with a semiconductor manufacturer (“Supplier”). The Supply Agreement provides for minimum purchase commitments through 2027 in exchange for guaranteed capacity at Supplier. We are responsible for providing certain materials to allow our Supplier to perform its obligations under the contract.

We paid our Supplier a deposit of $9.0 million in November 2022 and an additional deposit of $6.0 million in 2023, for a total of $15.0 million (the “Deposit”). The Deposit is fully refundable to us, in accordance with the Supply Agreement, if we meet the minimum volume purchase commitment for the applicable year. $3.0 million was refunded to us during the year ended December 31, 2024. As of December 31, 2024, $4.0 million related to the Deposit was included in prepaid expenses and other current assets on our consolidated balance sheets and $8.0 million related to the Deposit was included in other long-term assets on our consolidated balance sheets, as we believe it is probable the minimum volume purchase commitment level will be achieved.

NOTE 8. INCOME TAXES

We are subject to income taxes both in the United States and certain foreign jurisdictions in which we operate, and we use estimates in determining our provisions for income taxes. Significant management judgement is required in determining our provision for income taxes, deferred tax assets and liabilities, and valuation allowances recorded against net deferred tax assets in accordance with U.S. GAAP. These estimates and judgements occur in the calculation of tax credits, benefits, and deductions, and in the calculation of certain tax assets and liabilities, which arise from differences in the timing of recognition of revenue and expense for tax and financial statement purposes, as well as the interest and penalties related to uncertain tax positions. Significant changes to these estimates may result in an increase or decrease to our tax provision in the current or subsequent period.

We assess all material positions taken in any income tax return, including all significant uncertain positions, in all tax years that are still subject to assessment or challenge by relevant taxing authorities. Assessing an uncertain tax position begins with the initial determination of the position's sustainability and is measured at the largest amount of benefit that is greater than 50% likely of being realized upon ultimate settlement. As of each balance sheet date, unresolved uncertain tax positions must be reassessed, and we will determine whether the factors underlying the sustainability assertion have changed and the amount of the recognized tax benefit is still appropriate.

We account for Global Intangible Low-taxed Income as a period cost.

During the years ended December 31, 2024, 2023, and 2022 income/(loss) before taxes from U.S. operations were ($311.0) million, ($318.9) million, and ($315.7) million, respectively, and income/(loss) before taxes from foreign operations was $1.5 million, $0.7 million, and $1.8 million, respectively.

Income Tax Provision (Benefit)

Income tax provision (benefit) consists of the following:

	Years ended December 31,		
(in thousands)	2024	2023	2022
Total current	$ 521	$ —	$ —
Deferred:			
Federal	(8)	(9,956)	—
State	(197)	(1,468)	—
Foreign	—	—	—
Total deferred	(205)	(11,424)	—
Income tax provision (benefit)	$ 316	$ (11,424)	$ —

Income tax provision (benefit) related to continuing operations differ from the amounts computed by applying the statutory income tax rate of 21% to pretax loss as follows:

	Years ended December 31,		
	2024	2023	2022
Statutory tax rate	21.0 %	21.0 %	21.0 %
State tax rate, net of federal benefit	1.9	3.0	4.4
Change in valuation allowance	(10.8)	(20.0)	(25.1)
Tax credits	1.5	2.0	2.2
Share-based compensation	(3.7)	(2.1)	(2.2)
Merger Expenses	—	(0.1)	—
Goodwill impairment	(9.8)	—	—
Other	(0.2)	(0.2)	(0.4)
Total	(0.1)%	3.6 %	(0.1)%

Deferred income taxes reflect the net tax effects of loss and credit carryforwards and temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of our deferred tax assets for federal and state income taxes are as follows:

	December 31,	
(in thousands)	**2024**	**2023**
Deferred tax assets:		
Net operating loss carryforwards	$ 434,122	$ 435,488
Research and development credits	91,416	83,922
Capitalized research and experimental expenses	73,281	63,196
Accruals and reserves	10,506	16,872
Cancellation of indebtedness income and interest expense	20,424	14,907
Share-based compensation	18,195	18,584
Operating lease liability	5,618	9,510
Total deferred tax assets	653,562	642,479
Less: Valuation allowance	(558,794)	(525,703)
Total deferred tax assets:	94,768	116,776
Intangibles	(91,504)	(109,488)
Fixed assets	(261)	(548)
Operating lease right-of-use assets	(3,549)	(7,491)
Total deferred tax liabilities	(95,314)	(117,527)
Deferred tax liabilities, net	$ (546)	$ (751)

At December 31, 2024, we maintained a valuation allowance against our net deferred tax assets which totaled $558.8 million, including net operating loss carryforwards and research and development credits of $434.1 million and $91.4 million, respectively.

A valuation allowance is recorded when it is more likely than not that all or some portion of the deferred income tax assets will not be realized. We regularly assess the need for a valuation allowance against our deferred income tax assets by considering both positive and negative evidence related to whether it is more likely than not that our deferred income tax assets will be realized. In evaluating our ability to recover our deferred income tax assets within the jurisdiction from which they arise, we consider all available positive and negative evidence, including scheduled reversals of deferred income tax liabilities, projected future taxable income, tax-planning strategies, and results of recent operations. We maintain a valuation allowance on the net deferred tax assets of our U.S. entities as we have concluded that it is more likely than not that we will not realize our deferred tax assets.

For the year ended December 31, 2024, the Company's valuation allowance increased to $558.8 million, primarily because of an increase in our credits and capitalized research & experimental expenses that were fully offset by a valuation allowance. For the year ended December 31, 2023, the Company's valuation allowance increased to $525.7 million, primarily because of an increase in our net operating losses, credits, and capitalized research and experimental expenses that were fully offset by a valuation allowance.

As of December 31, 2024, we had a net operating loss carryforward for federal income tax purposes of approximately $1,704.2 million, of which $783.2 million is subject to expiration beginning in 2025. We had a total state net operating loss carryforward of approximately $1,170.6 million, which is subject to annual expirations. Utilization of some of the federal and state net operating loss and credit carryforwards are subject to annual limitations due to the “change in ownership” provisions of the Internal Revenue Code of 1986 and similar state provisions. The annual limitations may result in the expiration of net operating losses and credits before utilization.

We have federal credits of approximately $64.4 million, a portion of which will begin to expire in 2025 if not utilized and state research credits of approximately $54.6 million, which have no expiration date. These tax credits are subject to the same limitations discussed above.

As of December 31, 2024, our total unrecognized tax benefit was $17.7 million. A reconciliation of the beginning and ending unrecognized tax benefit balance is as follows:

(in thousands)		
Balance as of December 31, 2021	$	8,335
Decrease in balance related to tax positions taken in prior year		(10)
Increase in balance related to tax positions taken during current year		2,085
Balance as of December 31, 2022		10,410
Increase in balance related to tax positions taken in prior year		2,044
Increase in balance related to tax positions taken during current year		2,100
Balance as of December 31, 2023		14,554
Decrease in balance related to tax positions taken in prior year		(6)
Increase in balance related to tax positions taken during current year		3,128
Balance as of December 31, 2024	$	17,676

Our practice is to recognize interest and/or penalties related to income tax matters in income tax expense. As of December 31, 2024 and 2023, we had no accrued interest or penalties due to our net operating losses available to offset any tax adjustment. If total unrecognized tax benefits were realized in the future, it would not result in any tax benefit as we currently have a full valuation allowance. We file U.S. federal and various state income tax returns. For U.S. federal and state income tax purposes, the statute of limitations currently remains open for the years ending December 31, 2021 to present and December 31, 2020 to present, respectively. In addition, all of the net operating losses and research and development credit carryforwards that may be utilized in future years may be subject to examination. We are not currently under examination by income tax authorities in any jurisdiction.

NOTE 9. STOCKHOLDERS' EQUITY

Common and Preferred Stock

Our Certificate of Incorporation, as amended and restated in October 2010 in connection with the closing of our initial public offering, authorizes us to issue 1,000,000,000 shares of $0.001 par value common stock and 50,000,000 shares of $0.001 par value preferred stock. As of December 31, 2024 and 2023, there were no shares of preferred stock issued or outstanding.

Common stockholders are entitled to dividends when and if declared by our board of directors. There have been no dividends declared to date. The holder of each share of common stock is entitled to one vote.

Underwritten Public Equity Offerings

In January 2023, we entered into an underwriting agreement, relating to the public offering of 17.5 million shares of our common stock, $0.001 par value per share, at a price to the public of $10.00 per share. Under the terms of the underwriting agreement, we also granted the underwriters a 30-day option to purchase up to an additional 2.6 million shares of our common stock, which was subsequently exercised in full, and the offering, including the sale of shares of common stock subject to the underwriters' option, closed in January 2023. In total, we sold 20.1 million shares of our common stock. We paid a commission equal to 5.75% of the gross proceeds from the sale of shares of our common stock. The total net proceeds to us from the offering after deducting the underwriting discount were approximately $189.7 million, excluding approximately $0.5 million of offering expenses.

Equity Plans

The 2020 Equity Incentive Plan (the "2020 Plan"), the 2020 Inducement Equity Incentive Plan (the "Inducement Plan"), and the 2021 adopted Omniome Equity Incentive Plan of Pacific Biosciences of California, Inc. (the "Omniome Plan") allow for the issuance of stock options, restricted units and awards, and performance-based awards. The 2010 Employee Stock Purchase Plan (the "ESPP") allows eligible employees to acquire common stock at a discounted price through payroll deductions during designated offering periods.

On May 25, 2022, stockholders approved an amendment to the 2020 Plan, and we reserved an additional 18.0 million shares of our common stock for issuance pursuant to equity awards granted under the 2020 Plan.

On June 18, 2024, stockholders approved an amendment to the 2020 Plan, and we reserved an additional 20.0 million shares of our common stock for issuance pursuant to equity awards granted under the 2020 Plan.

As of December 31, 2024, we had 28.4 million shares remaining and available for future issuance under the 2020 Plan, Inducement Plan, and the Omniome Plan. Shares remaining and available for future issuance reflect shares that may become eligible to vest upon the achievement of maximum targets for certain equity awards.

Stock Options

The following table summarizes stock option activity for time-based awards:

(shares in thousands)	Number of shares		Weighted-average exercise price
Outstanding at December 31, 2023	13,011	$	10.63
Granted	493	$	1.99
Exercised	(515)	$	3.15
Canceled	(2,153)	$	8.89
Expired	(327)	$	5.81
Outstanding at December 31, 2024	10,509	$	11.09

The aggregate intrinsic value of the outstanding options presented in the table above as of December 31, 2024, totaled $0.1 million, and had a weighted-average remaining contractual life of 5.4 years.

The aggregate intrinsic value of outstanding options represents the total pre-tax intrinsic value (i.e. the difference between $1.83, our closing stock price on the last trading day of our fourth quarter of 2024, and the option exercise price multiplied by the number of in-the-money options) that would have been received by the option holders had all option holders exercised their options on December 31, 2024. The aggregate intrinsic value changes at each reporting date based on the fair market value of our common stock.

The vested and exercisable options as of December 31, 2024, totaled 9,429,082 shares, had an aggregate intrinsic value that was not significant, a weighted-average exercise price per share of $11.26, and a weighted-average remaining contractual life of 5.1 years.

The vested and expected to vest options as of December 31, 2024, totaled 10,957,644 shares, had an aggregate intrinsic value of $0.1 million, a weighted-average exercise price per share of $11.13, and a weighted-average remaining contractual life of 5.4 years.

The total intrinsic value of stock options exercised during the years ended December 31, 2024, 2023, and 2022 was $0.8 million, $8.8 million, and $5.0 million, respectively. The total intrinsic value of options exercised represents the difference between our closing stock price on the exercise date and the option exercise price, multiplied by the number of in-the-money options exercised.

The weighted-average grant-date fair value of all options granted was $1.40 in 2024, $7.32 in 2023, and $5.93 in 2022, each determined by the Black-Scholes option valuation method.

Restricted Stock Units ("RSU") and Performance Stock Units ("PSU")

We have awarded both Restricted Stock Units (RSUs) and Performance Stock Units (PSUs). Each RSU represents the right to receive one share of our common stock upon meeting the required service-based vesting conditions. RSUs typically vest over four years, with equal annual installments.

In 2023, PSUs were granted and are based on performance against predefined revenue targets and require continued employment throughout the vesting period. These shares become issuable after the third year of the performance period. Achieving the maximum revenue goal allows up to 200% of the target PSU shares to become eligible for vesting, while failing to meet the minimum revenue goal results in no shares vesting.

The following table summarizes the time-based RSU and PSU activity:

(shares in thousands)	Restricted Stock Units (RSUs)	Performance Stock Units (PSUs)	Weighted-average grant date fair value	
			RSU	PSU
Outstanding at December 31, 2023	11,308	541	$ 12.06	$ 9.43
Granted	12,722	—	5.02	—
Vested	(3,801)	—	12.43	—
Forfeited	(6,018)	(149)	7.90	9.43
Outstanding at December 31, 2024	14,211	392	$ 7.41	$ 9.43

The total fair value of shares vested related to RSUs during the years ended December 31, 2024, 2023, and 2022 was $47.2 million, $39.3 million, and $39.2 million, respectively.

The weighted-average grant-date fair value of all RSUs granted was $5.02 in 2024, $9.65 in 2023, and $10.15 in 2022.

Employee Stock Purchase Plan

As of December 31, 2024, a total of 33.5 million shares of our common stock have been reserved for issuance under the ESPP, which allows eligible employees to acquire common stock at a discounted price through payroll deductions during designated offering periods. Each offering period typically consists of four purchase periods, each lasting approximately six months. Shares are purchased at the lower of 85% of the fair market value of the common stock at either the beginning of the offering period or the end of the purchase period. If the stock price at the end of a purchase period is lower than at the start of the offering period, the existing offering period will be reset, and a new offering period will begin. The ESPP provides for an annual increase to the shares available for issuance at the beginning of each fiscal year equal to the lesser of 2% of the common shares then outstanding, 4,000,000 shares, or an amount determined by the ESPP's administrator.

For the years ended December 31, 2024, 2023, and 2022, 1,906,529 shares, 1,735,058 shares, and 1,878,168 shares of common stock were purchased under the ESPP, respectively. As of December 31, 2024, 14.3 million shares of our common stock remain available for issuance under our ESPP.

Share-based Compensation

The following table summarizes share-based compensation expense:

(in thousands)	Years Ended December 31,		
	2024	2023	2022
Cost of revenue	$ 5,691	$ 5,399	$ 4,802
Research and development	19,172	22,435	30,676
Sales, general and administrative	46,173	44,284	43,135
Total share-based compensation	71,036	72,118	78,613

As of December 31, 2024 and 2023, $0.6 million and $0.6 million of share-based compensation cost was capitalized in inventory, net, on our consolidated balance sheets, respectively.

We estimate forfeitures related to our share-based compensation plans. The estimated forfeiture rate is based on historical data, trends, and other relevant factors, such as employee turnover rates and expectations about future forfeitures. The estimated forfeiture rate is reviewed periodically and adjusted as necessary to reflect changes in these factors.

The tax benefit of share-based compensation expense was immaterial for the years ended December 31, 2024, 2023, and 2022 due to a valuation allowance on the net deferred tax assets of our U.S. entities, for which we have concluded that it is more likely than not that we will not realize our deferred tax assets.

Determining Fair Value

We estimate the fair value of share options granted using the Black-Scholes valuation method and a single option award approach. This fair value is then amortized on a straight-line basis over the requisite service periods of the awards, which is generally the vesting period. The fair market value of RSU awards granted is the closing price of our shares on the date of grant and is generally recognized as compensation expense on a straight-line basis over the respective vesting period. For shares purchased under the ESPP, we estimate the grant-date fair value, and the resulting share-based compensation expense, using the Black-Scholes option-pricing model.

- Expected Term – The expected term used in the Black-Scholes valuation method represents the period that the stock options are expected to be outstanding and is determined based on historical experience of similar awards, considering the contractual terms of the stock options and vesting schedules.
- Expected Volatility – The expected volatility used in the Black-Scholes valuation method is derived from the implied volatility related to our share price over the expected term.
- Expected Dividend – We have never paid dividends on our shares and, accordingly, the dividend yield percentage is zero for all periods.
- Risk-Free Interest Rate – The risk-free interest rate used in the Black-Scholes valuation method is the implied yield currently available on U.S. Treasury constant maturities issued with a term equivalent to the expected terms.

Stock Options

When determining the current share prices underlying the stock options for calculating the grant-date fair value, we reference observable market prices of similar or identical instruments in active markets.

The fair value of employee stock options was estimated using the following weighted-average assumptions:

	Years Ended December 31,		
	2024	2023	2022
Expected term in years	4.9	4.9	4.6
Expected volatility	81% - 93%	77% - 78%	70% - 76%
Risk-free interest rate	3.48% – 4.32%	3.73% – 4.60%	0.41% – 3.66%
Dividend yield	—	—	—
Weighted-average grant date fair value per share	$ 1.40	$ 7.32	$ 5.93

Cash received from option exercises for the years ended December 31, 2024, 2023, and 2022 was $1.6 million, $6.5 million and $3.4 million, respectively.

ESPP

The fair value of shares to be issued under the ESPP was estimated using the following assumptions:

	Years Ended December 31,		
	2024	2023	2022
Expected term in years	0.5 - 2.0	0.5 - 2.0	0.5 - 2.0
Expected volatility	81% - 118%	79% - 97%	70% - 97%
Risk-free interest rate	3.9% - 5.3%	4.9% - 5.5%	0.6% - 3.5%
Dividend yield	—	—	—
Weighted-average grant date fair value per share	$ 1.53	$ 5.34	$ 4.28

Cash received through the ESPP for the years ended December 31, 2024, 2023, and 2022 was $6.1 million, $8.8 million, and $7.8 million, respectively.

As of December 31, 2024, $80.1 million of total unrecognized compensation expense related to stock options, restricted stock, and ESPP shares was expected to be recognized over a weighted-average period of 2.2 years.

NOTE 10. NET LOSS PER SHARE

The following table presents the calculation of the basic and diluted net loss per share amounts presented on our consolidated statements of operations and comprehensive loss:

	Years Ended December 31,		
(in thousands, except per share amounts)	2024	2023	2022
Numerator:			
Basic			
Basic net loss	$ (309,851)	$ (306,735)	$ (314,248)
Diluted			
Basic net loss	$ (309,851)	$ (306,735)	$ (314,248)
Add: Interest charges applicable to convertible notes (2028 Notes)	6,428	—	—
Less: Gain on debt restructuring (2029 Notes)	(154,407)	—	—
Diluted net loss	$ (457,830)	$ (306,735)	$ (314,248)
Denominator:			
Basic			
Weighted-average shares used in computing basic net loss per share	274,488	253,629	224,550
Basic net loss per share	$ (1.13)	$ (1.21)	$ (1.40)
Diluted			
Weighted-average shares used in computing basic net loss per share	274,488	253,629	224,550
Add: Weighted average shares issuable upon conversion of convertible notes (2028 Notes)	9,395	—	—
Add: Weighted average shares issuable upon conversion of convertible notes (2029 Notes)	4,483	—	—
Weighted-average shares used in computing diluted net loss per share	288,366	253,629	224,550
Diluted net loss per share	$ (1.59)	$ (1.21)	$ (1.40)

The following shares issuable upon conversion of the convertible senior notes and outstanding equity awards were excluded from the computation of diluted net loss per share for the periods presented because the effect of including such shares would have been antidilutive:

	Years Ended December 31,		
(in thousands)	2024	2023	2022
Shares issuable upon conversion of convertible senior notes	20,512	31,063	20,690
Equity awards	34,136	27,246	27,291

See *Note 2. Business Acquisitions*, for detailed information on contingently issuable shares that would be due upon achievement of a milestone. See *Note 9. Stockholders' Equity* for detailed information on equity awards.

NOTE 11. SEGMENT AND GEOGRAPHIC INFORMATION

We are organized as, and operate in, one reportable segment: the development, manufacturing, and marketing of integrated platforms for genetic analysis. Our chief operating decision-maker (CODM) is our Chief Executive Officer. Our CODM reviews financial information presented on a consolidated basis for the purposes of evaluating financial performance and allocating resources.

On a regular basis, our CODM reviews:

- total revenues by category
- total expenses and expenses by function, including sales and marketing and general and administrative, which include depreciation and share-based compensation
- net loss per share

Our assets are primarily located in the United States of America and not allocated to any specific region, and we do not measure the performance of geographic regions based upon asset-based metrics. Therefore, geographic information is presented only for revenue.

A summary of the segment profit or loss, including significant segment expenses is as follows:

	Years Ended December 31,		
(in thousands)	**2024**	**2023**	**2022**
Total revenue	154,014	200,521	128,304
Less:			
Cost of revenue	116,732	147,741	79,269
Research and development	134,922	187,170	193,000
Sales and marketing	87,244	79,287	84,465
General and administrative	87,773	90,531	76,389
Impairment charges	184,500	—	—
Merger-related expenses	—	9,042	—
Change in fair value of contingent consideration	(850)	15,060	2,377
Amortization of acquired intangible assets	18,006	6,157	—
Loss on extinguishment of debt	—	2,033	—
Gain on debt restructuring	(154,407)	—	—
Other income (expense), net	10,371	18,341	(7,052)
Income tax provision (benefit)	316	(11,424)	—
Consolidated net loss	(309,851)	(306,735)	(314,248)

A summary of our revenue by geographic location is as follows:

	Years Ended December 31,		
(in thousands)	**2024**	**2023**	**2022**
Americas [1]	$ 78,711	$ 105,410	$ 69,561
Europe, Middle East, and Africa	34,594	40,658	22,598
Asia-Pacific	40,709	54,453	36,145
Total	$ 154,014	$ 200,521	$ 128,304

(1) Includes United States revenue of $75.3 million, $100.5 million, and $66.8 million for the years ended December 31, 2024, 2023, and 2022, respectively.

A summary of our revenue by category is as follows:

	Years Ended December 31,		
(in thousands)	**2024**	**2023**	**2022**
Instrument revenue	$ 65,776	$ 120,451	$ 48,719
Consumable revenue	70,373	63,421	59,980
Product revenue	136,149	183,872	108,699
Service and other revenue	17,865	16,649	19,605
Total revenue	$ 154,014	$ 200,521	$ 128,304

NOTE 12. SUBSEQUENT EVENTS

On March 7, 2025, we entered into an amendment to our existing lease for our corporate headquarters, research and development facilities, and manufacturing and distribution centers in Menlo Park, California. The lease amendment extends the term from the prior expiration on October 31, 2027 to its new expiration on April 30, 2034. We will pay approximately $97.7 million in base rent over the life of the amended lease, and receive base rent abatement of approximately $11.6 million for the period beginning on March 1, 2025 and ending on July 31, 2026. We are also entitled to a tenant improvement allowance of $7.2 million.

On March 7, 2025, we entered into an agreement to acquire certain technology and related intellectual property from the Chinese University of Hong Kong for $9.7 million.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Interim Chief Financial Officer, and our Chief Accounting Officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a–15(e) and 15d–15(e) of the Exchange Act) as of the end of the period covered by this Annual Report on Form 10–K. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to our management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgement in evaluating the cost-benefit relationship of possible controls and procedures. Based on this evaluation, our Chief Executive Officer and Interim Chief Financial Officer and our principal accounting officer concluded that our disclosure controls and procedures were effective at a reasonable assurance level as of the end of the period covered by this report.

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). Pacific Biosciences of California, Inc.'s internal control over financial reporting is designed to provide reasonable assurance to the Company's management and board of directors regarding the preparation and fair presentation of published financial statements. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2024. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). Based on our assessment, we concluded that, as of December 31, 2024, the Company's internal control over financial reporting was effective based on those criteria.

The Company's internal control over financial reporting as of December 31, 2024 has been audited by Ernst & Young LLP, the independent registered public accounting firm who also audited the Company's financial statements. Ernst & Young's attestation report on the Company's internal control over financial reporting appears on page 127 hereof.

Changes in Internal Control Over Financial Reporting

There were no material changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the year ended December 31, 2024, that have materially affected, or were reasonably likely to materially affect, our internal control over financial reporting.

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Pacific Biosciences of California, Inc.

Opinion on Internal Control Over Financial Reporting

We have audited Pacific Biosciences of California, Inc.'s internal control over financial reporting as of December 31, 2024, 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, Pacific Biosciences of California, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2024, 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 2024 consolidated financial statements of the Company and our report dated March 17, 2025 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 Mateo, California

March 17, 2025

ITEM 9B. OTHER INFORMATION

Securities Trading Plans of Directors and Executive Officers

During our last fiscal quarter, none of our directors or officers, as defined in Rule 16a-1(f), adopted and/or terminated a “Rule 10b5-1 trading arrangement” or a “non-Rule 10b5-1 trading arrangement,” each as defined in Item 408 of Regulation S-K.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information responsive to this item is incorporated herein by reference to our definitive proxy statement with respect to our 2025 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

ITEM 11. EXECUTIVE COMPENSATION

Information responsive to this item is incorporated herein by reference to our definitive proxy statement with respect to our 2025 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

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

Information responsive to this item is incorporated herein by reference to our definitive proxy statement with respect to our 2025 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

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

Information responsive to this item is incorporated herein by reference to our definitive proxy statement with respect to our 2025 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information responsive to this item is incorporated herein by reference to our definitive proxy statement with respect to our 2025 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K:

1. *Financial Statements*: See Index to Consolidated Financial Statements under Item 8 of this Annual Report on Form 10-K.
2. *Financial Statement Schedules*: All schedules are omitted because they are not required, are not applicable or the information is included in the Consolidated Financial Statements or notes thereto.
3. *Exhibits*: We have filed or incorporated by reference into this Annual Report on Form 10-K, the exhibits listed on the accompanying Exhibit Index immediately below.

(b) Financial Statement Schedules: See Item 15(a)(2), above.

(c) Exhibits: Refer to the Exhibit Index that follows.

Exhibit Index

Exhibit Number	Description	Incorporated by reference herein		
		Form	Exhibit No.	Filing Date
3.1	Amended and Restated Certificate of Incorporation	10-K	3.1	March 23, 2011
3.2	Third Amended and Restated Bylaws of Pacific Biosciences of California, Inc.	8-K	3.1	November 7, 2022
3.3	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of Pacific Biosciences of California, Inc. to declassify the Board	8-K	3.1	June 20, 2024
3.4	Certificate of Amendment to the Certificate of Incorporation of Pacific Biosciences of California, Inc. to limit the liability of officers	8-K	3.2	June 20, 2024
4.1	Specimen Common Stock Certificate	S-1/A	4.1	October 1, 2010
4.2	Description of Registrant's securities registered under Section 12 of the Exchange Act			Filed herewith
4.3	Indenture, dated February 16, 2021, between Pacific Biosciences of California, Inc., and U.S. Bank National Association, as Trustee	10-Q	4.1	August 4, 2023
4.4	Form of 1.50% Convertible Senior Notes due 2028 (included in Exhibit 4.3)	10-Q	4.1	August 4, 2023
4.5	Indenture, dated as of June 30, 2023, by and between Pacific Biosciences of California, Inc. and U.S. Bank Trust Company, National Association, as Trustee	8-K	4.1	June 30, 2023
4.6	Form of 1.375% Convertible Senior Note due 2030 (included in Exhibit 4.5)	8-K	4.2	June 30, 2023
4.7	Indenture, dated as of November 21, 2024, by and between Pacific Biosciences of California, Inc. and U.S. Bank Trust Company, National Association, as Trustee.	8-K	4.1	November 22, 2024
4.8	Form of 1.50% Convertible Senior Note due 2029 (included in Exhibit 4.7)	8-K	4.2	November 22, 2024
10.1+	Form of Director and Executive Officer Indemnification Agreement	S-1	10.1	August 16, 2010
10.2+	2010 Equity Incentive Plan	S-1	10.4	August 16, 2010
10.3+	2010 Equity Incentive Plan forms of agreement	10-Q	10.1	May 2, 2018
10.4+	2010 Employee Stock Purchase Plan and forms of agreement thereunder	S-1	10.5	August 16, 2010
10.5+	2010 Outside Director Equity Incentive Plan	S-1	10.6	August 16, 2010
10.6+	2010 Outside Director Equity Incentive Plan forms of agreement	10-Q	10.2	May 2, 2018
10.7+	2020 Equity Incentive Plan, as amended	8-K	10.1	June 20, 2024
10.8+	Form of Global Stock Option Agreement under the Pacific Biosciences of California, Inc., 2020 Equity Incentive Plan, as amended	8-K	10.2	June 20, 2024
10.9+	Form of Global Restricted Stock Unit Agreement under the Pacific Biosciences of California, Inc. 2020 Equity Incentive Plan, as amended	8-K	10.3	June 20, 2024
10.10+	Omniome Equity Incentive Plan of Pacific Biosciences of California, Inc., and related forms of agreement thereunder	10-Q	10.4	November 5, 2021
10.11+	Pacific Biosciences of California, Inc. 2020 Inducement Equity Incentive Plan, as amended, and forms of agreement thereunder	8-K	10.1	November 19, 2021
10.12+	Letter Relating to Employment Terms by and between the Registrant and Susan G. Kim effective September 28, 2020	10-Q	10.2	November 3, 2020
10.13+	Form of Change in Control and Severance Agreement for executive officers			Filed herewith
10.14+	Letter Relating to Employment Terms by and between the Registrant and Christian O. Henry effective September 14, 2020	10-K	10.15	February 26, 2021
10.15+	Amended Change in Control and Severance Agreement by and between the Registrant and Christian O. Henry dated December 11, 2024			Filed herewith
10.16+	Letter Relating to Employment Terms by and between the Registrant and Mark Van Oene effective January 8, 2021	10-K	10.18	February 26, 2021

10.17+	Amended Change in Control and Severance Agreement by and between the Registrant and Mark Van Oene dated December 12, 2024			Filed herewith
10.18†	Lease Agreement by and between the Registrant and Menlo Park Portfolio II, LLC, dated July 22, 2015			Filed herewith
10.19†	First Amendment to Lease Agreement by and between the Registrant and Menlo Park Portfolio II, LLC, dated December 23, 2016			Filed herewith
10.20	Second Amendment to Lease Agreement by and between the Registrant and Menlo Park Portfolio II, LLC, dated December 30, 2019			Filed herewith
10.21	Third Amendment to Lease Agreement by and between the Registrant and Menlo Park Portfolio II, LLC, dated March 7, 2025			Filed herewith
10.22	Investment Agreement, dated as of February 9, 2021, between Pacific Biosciences of California, Inc. and SB Northstar LP.	8-K	10.1	February 10, 2021
10.23+	Letter Relating to Employment Terms by and between the Registrant and Michele Farmer effective May 17, 2021	10-Q	10.2	August 6, 2021
10.24	Agreement and Plan of Merger of Reorganization among Pacific Biosciences of California, Inc., Apollo Acquisition Corp., Apollo Acquisition Sub, LLC, Omniome, Inc. and Shareholder Representative Services, LLC, as securityholder representative, dated as of July 19, 2021	8-K	10.1	July 20, 2021
10.25	Securities Purchase Agreement, dated as of July 19, 2021, by and between Pacific Biosciences of California, Inc., and each of the Investors	8-K	10.2	July 20, 2021
10.26+	Letter Relating to Employment Terms by and between the Registrant and Jeff Eidel effective August 16, 2022	8-K	99.3	January 24, 2023
10.27+	Separation Agreement and Release, by and between the Company and Jeff Eidel, dated December 6, 2024 and effective December 13, 2024	8-K/A	10.1	December 13, 2024
10.28+	Change in Control and Severance Agreement by and between the Registrant and Susan G. Kim effective February 3, 2021	8-K	99.4	January 24, 2023
10.29	Letter Agreement, dated June 23, 2023, between the Company and Chimera Investment LLC	8-K	10.1	June 23, 2023
10.30	Letter Agreement, dated November 7, 2024, between the Company and SB Northstar LP	8-K	10.1	November 7, 2024
10.31	Letter Agreement, dated November 21, 2024, between the Company and SB Northstar LP	8-K	10.1	November 22, 2024
10.32+	Form of Performance-Based Restricted Stock Unit Award Agreement under the Pacific Biosciences of California, Inc. 2020 Equity Incentive Plan, as amended	10-K	10.28	February 28, 2024
10.33+	Outside Director Compensation Policy			Filed herewith
19.1	Insider Trading Policy			Filed herewith
21.1	List of Subsidiaries of the Registrant			Filed herewith
23.1	Consent of Independent Registered Public Accounting Firm			Filed herewith
31.1	Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002			Filed herewith
31.2	Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002			Filed herewith
32.1*	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002			Furnished herewith
32.2*	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002			Furnished herewith
97.1	Compensation Recovery Policy	10-K	97.1	February 28, 2024
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)			Filed herewith
101.SCH	XBRL Taxonomy Extension Schema Document			Filed herewith
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document			Filed herewith

101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	Filed herewith
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document	Filed herewith
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	Filed herewith
104	Cover Page Interactive File (formatted as inline XBRL and contained in Exhibit 101)	Filed herewith

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+ Indicates management contract or compensatory plan.

† Certain confidential information contained in this Exhibit was omitted by means of marking such portions with brackets because (i) the identified confidential information is not material and (ii) the company customarily and actually treats that information as private or confidential.

* The certifications attached as Exhibit 32.1 and 32.2 that accompany this Annual Report on Form 10-K are deemed furnished and not filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Pacific Biosciences of California, Inc. under the Securities Act or the Exchange Act, whether made before or after the date of this Annual Report on Form 10-K, irrespective of any general incorporation language contained in such filing.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

Pacific Biosciences of California, Inc.

Date: March 17, 2025

By: /s/ Christian O. Henry

Christian O. Henry

President, Chief Executive Officer and Interim Chief Financial Officer

Date: March 17, 2025

By: /s/ Michele Farmer

Michele Farmer

Vice President and Chief Accounting Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Christian O. Henry, Brett Atkins, and Michele Farmer, and each of them, as his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for each individual 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 for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or the individual's substitute, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
/s/ Christian O. Henry Christian O. Henry	Director, President, Chief Executive Officer and Interim Chief Financial Officer (Principal Executive Officer and Principal Financial Officer)	March 17, 2025
/s/ Michele Farmer Michele Farmer	Vice President and Chief Accounting Officer (Principal Accounting Officer)	March 17, 2025
/s/ John F. Milligan John F. Milligan	Chairman of the Board of Directors	March 17, 2025
/s/ William W. Ericson William W. Ericson	Director	March 17, 2025
/s/ Randall S. Livingston Randall S. Livingston	Director	March 17, 2025
/s/ Marshall L. Mohr Marshall L. Mohr	Director	March 17, 2025
/s/ Kathy Ordoñez Kathy Ordoñez	Director	March 17, 2025
/s/ Lucy Shapiro Lucy Shapiro	Director	March 17, 2025
/s/ Christopher M. Smith Christopher M. Smith	Director	March 17, 2025
/s/ Hannah A. Valantine Hannah A. Valantine	Director	March 17, 2025

Exhibit 4.2

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

DESCRIPTION OF CAPITAL STOCK

The following information describes our common stock and preferred stock, as well as certain provisions of our amended and restated certificate of incorporation (as amended, the "amended and restated certificate of incorporation") and amended and restated bylaws. This summary does not purport to be complete and is qualified in its entirety by the provisions of our amended and restated certificate of incorporation and amended and restated bylaws, copies of which have been filed as exhibits to this Annual Report on Form 10-K, as well as to the applicable provisions of the Delaware General Corporation Law.

General

Our authorized capital stock consists of 1,000,000,000 shares of common stock with a $0.001 par value per share, and 50,000,000 shares of undesignated preferred stock with a $0.001 par value per share. Our board of directors may establish the rights, powers and preferences of the preferred stock from time to time.

Common Stock

Each holder of our common stock is entitled to one vote for each share on each matter properly submitted to stockholders on which the holders of common stock are entitled to vote. Subject to any preferential rights of any outstanding preferred stock, holders of our common stock are entitled to receive ratably the dividends and other distributions, if any, as may be declared from time to time by the board of directors out of any assets or funds legally available therefor. We have never declared or paid any cash dividend on our capital stock and do not anticipate paying any cash dividends in the foreseeable future. In the event of our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in our assets remaining after the payment of liabilities and any preferential rights of any outstanding preferred stock.

Holders of our common stock have no preemptive or conversion rights or other subscription rights, and there are no redemption or sinking fund provisions applicable to the common stock. The outstanding shares of common stock are fully paid and non-assessable. The rights and powers of the holders of our common stock are subject to, and may be adversely affected by, the rights, powers and preferences of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Our common stock is listed on the NASDAQ Global Select Market under the symbol "PACB." The transfer agent and registrar for the common stock is Computershare Trust Company, N.A.

Preferred Stock

Under the terms of our amended and restated certificate of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, powers, preferences and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock. Subject to limitations under applicable law, there are no restrictions presently on the repurchase or redemption of any shares of our preferred stock.

The issuance of shares of preferred stock will affect, and may adversely affect, the rights of holders of common stock. It is not possible to state the actual effect of the issuance of any shares of preferred stock on the rights of holders of common stock until our board of directors determines the specific rights attached to that preferred stock. The effects of issuing additional preferred stock could include one or more of the following:

- restricting dividends on the common stock;
- diluting the voting power of the common stock;
- impairing the liquidation rights of the common stock; or
- delaying or preventing changes in control or management of our company.

Preferred stock will be fully paid and nonassessable upon issuance.

Effect of Certain Provisions of our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws and the Delaware Anti-Takeover Statute

Some provisions of Delaware law and our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could make the following transactions more difficult:

- acquisition of us by means of a tender offer;
- acquisition of us by means of a proxy contest or otherwise; or
- removal of our incumbent officers and directors.

Those provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids and to promote stability in our management. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors.

Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws

Our amended and restated certificate of incorporation and our amended and restated bylaws provide for the following:

- *Undesignated Preferred Stock*. Our board of directors may issue one or more series of preferred stock with voting or other rights, powers or preferences that could impede the success of any attempt to change control of our company. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company.

- *Stockholder Special Meetings*. Our amended and restated certificate of incorporation and amended and restated bylaws provide that in general a special meeting of stockholders may be called only by our board of directors, its chairperson, our chief executive officer or our president (in the absence of a chief executive officer).

- *Requirements for Advance Notification of Stockholder Nominations and Proposals*. Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals and the nomination by stockholders of candidates for election as directors.

- *Board Classification*. Our board of directors is divided into three classes, designated Class I, Class II and Class III. The directors in each class have been elected to serve for a three-year term, one class being elected each year by our stockholders. At our annual meeting of stockholders held in 2025 (the "2025 Annual Meeting"), the successors of the Class III directors whose terms expire at the 2025 Annual Meeting will each be elected for a term expiring at our annual meeting of stockholders held in 2026 (the "2026 Annual Meeting"). At the 2026 Annual Meeting, the successors of the directors whose terms expire at the 2026 Annual Meeting (including the Class I directors and the successors of the directors elected at the 2025 Annual Meeting) will each be elected for a term expiring at our annual meeting of stockholders held in 2027 (the "2027 Annual Meeting"). At the 2027 Annual Meeting and at all annual meetings thereafter, all directors will be elected for terms expiring at the next annual meeting of stockholders. While our classified board structure will be phased out so that our board of directors will be fully declassified by the 2027 Annual Meeting, this system of electing directors may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

- *Limits on Ability of Stockholders to Act by Written Consent*. We have provided in our amended and restated certificate of incorporation and our amended and restated bylaws that, except as otherwise expressly provided by the terms of any series of preferred stock permitting the holders of such series of preferred stock to act by written consent, our stockholders may not act by written consent. This limit on the ability of our stockholders to act by written consent may lengthen the amount of time required to take stockholder actions. As a result, a holder controlling a majority of our capital stock would not be able to amend our amended and restated bylaws or remove directors without holding a meeting of our stockholders called in accordance with our amended and restated certificate of incorporation and amended and restated bylaws.

- *Election and Removal of Directors*. Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that establish specific procedures for appointing and removing members of our board of directors. Under our amended and restated certificate of incorporation and amended and restated bylaws, subject to the rights of holders of any series of preferred stock with respect to the election of directors, and except as otherwise provided by resolution of our board of directors, vacancies and newly created directorships resulting from an increase in the authorized number of directors elected by all of the stockholders having the right to vote as a single class may be filled only by the affirmative vote of a majority of the directors then serving on the board of directors. Under our amended and restated certificate of incorporation and amended and restated bylaws, and subject to the rights of holders of any series of preferred stock with respect to the election of directors, directors may be removed from office in the manner provided in Section 141(k) of the Delaware General Corporation Law.

- *No Cumulative Voting*. The Delaware General Corporation Law provides that stockholders are not entitled to the right to cumulate votes in the election of directors unless our amended and restated certificate of incorporation provides otherwise. Our amended and restated certificate of incorporation and amended and restated bylaws do not expressly provide for cumulative voting. Without cumulative voting, a minority stockholder may not be able to gain as many seats on our board of directors as the stockholder would be able to gain if cumulative voting were permitted. The absence of cumulative voting makes it more difficult for a minority stockholder to gain a seat on our board of directors to influence our board of directors' decision regarding a takeover.

Delaware Anti-Takeover Statute

We are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging, under certain circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, but not for determining the outstanding voting stock owned by the interested stockholder, (i) shares owned by persons who are directors and also officers, and (ii) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

- at or subsequent to the date of the transaction, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66-2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. An interested stockholder is a person who, together with its affiliates and associates, owns or, within three years prior to the determination of interested stockholder status, did own 15% or more of a corporation's outstanding voting stock. We expect the existence of this provision to have an anti-takeover effect with respect to transactions our board of directors does not approve in advance. We also anticipate that Section 203 may discourage attempts that might result in a premium over the market price for the shares of common stock held by stockholders.

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.

CHANGE IN CONTROL AND SEVERANCE AGREEMENT

This Change in Control and Severance Agreement (the "*Agreement*") is made and entered into by and between [_____] ("*Executive*") and Pacific Biosciences of California, Inc., a Delaware corporation (the "*Company*"), effective as of [_____], 202[_] (the "*Effective Date*").

RECITALS

1. It is expected that the Company from time to time will consider the possibility of an acquisition by another company or other change in control. The Board of Directors of the Company (the "*Board*") recognizes that such considerations can be a distraction to Executive and can cause Executive to consider alternative employment opportunities. The Board has determined that it is in the best interests of the Company and its stockholders to assure that the Company will have the continued dedication and objectivity of Executive, notwithstanding the possibility, threat or occurrence of such a termination of employment or the occurrence of a Change in Control (as defined herein) of the Company.

2. The Board believes that it is in the best interests of the Company and its stockholders to provide Executive with an incentive to continue Executive's employment and to motivate Executive to maximize the value of the Company for the benefit of its stockholders.

3. The Board believes that it is imperative to provide Executive with certain severance benefits upon Executive's termination of employment in connection with a Change in Control. These benefits will provide Executive with enhanced financial security, incentive and encouragement to remain with the Company.

4. Certain capitalized terms used in the Agreement are defined in Section 6 below.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

1. Term of Agreement. This Agreement will have an initial term of three (3) years commencing on the Effective Date (the "*Initial Term*"). On the third anniversary of the Effective Date, this Agreement will renew automatically for additional one (1) year terms (each an "*Additional Term*"), unless either party provides the other party with written notice of non-renewal at least sixty (60) days prior to the date of automatic renewal. Notwithstanding the foregoing provisions of this paragraph, if a Change in Control occurs when there are fewer than twelve (12) months remaining during the Initial Term or an Additional Term, the term of this Agreement will extend automatically through the date that is twelve (12) months following the effective date of the Change in Control. If Executive becomes entitled to benefits under Section 3(a) or Section 3(b) during the term of this Agreement, the Agreement will not terminate until all of the obligations of the parties hereto with respect to this Agreement have been satisfied.

2. At-Will Employment. The Company and Executive acknowledge that Executive's employment is and will continue to be at-will, as defined under applicable law. No payments, benefits, or provisions under this Agreement will confer upon Executive any right to continue Executive's employment with the Company, nor will they interfere with or limit in any way the right of the Company or Executive to terminate such relationship at any time, with or without cause, to the extent permitted by applicable laws.

3. Severance Benefits.

(a) Termination without Cause or Other than Death or Disability or Resignation for Good Reason Other than During the Change in Control Period. If a Qualifying Termination occurs other than during the Change in Control Period, then subject to Section 4, Executive will receive the following severance from the Company:

(i) Base Salary Severance. Executive will receive a lump sum cash payment equal to twelve (12) months of Executive's salary, less any applicable withholdings.

(ii) Continued Employee Benefits. If Executive elects continuation coverage pursuant to the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("*COBRA*") for Executive and Executive's eligible dependents (as applicable), within the time period prescribed pursuant to COBRA, Executive will receive Company-paid group health, dental and vision coverage for Executive and Executive's eligible dependents, as applicable, at the coverage levels in effect immediately prior to the termination of Executive's employment (the "*COBRA Severance*") until the earliest of: (A) a period of twelve (12) months from the last date of employment of the Executive with the Company, (B) the date upon which Executive and/or Executive's eligible dependents becomes covered under similar plans, or (C) the expiration of Executive's and Executive's eligible dependents' (as applicable) eligibility for continuation coverage under COBRA.

(b) Termination without Cause or Other than Death or Disability or Resignation for Good Reason During the Change in Control Period. If a Qualifying Termination occurs during the Change in Control Period, then subject to Section 4, Executive will receive the following severance from the Company:

(i) Base Salary Severance. Executive will receive a lump sum cash payment equal to twelve (12) months of Executive's salary, less any applicable withholdings.

(ii) Prorated Target Bonus Severance. Executive will receive a lump sum cash payment equal to Executive's annualized target bonus in effect for the year in which the Qualifying Termination occurs, provided that such amount will be prorated based on a fraction, the numerator of which is the number of days during which Executive was employed with the Company (or its successor) in the year that the Qualifying Termination occurs, and the denominator of which is the total number of days in such year (the "*Prorated Bonus Severance*").

(iii) Continued Employee Benefits. If Executive elects continuation coverage pursuant to COBRA for Executive and Executive's eligible dependents (as applicable), within the time period prescribed pursuant to COBRA, the Company will provide the COBRA Severance until the earliest of: (A) a period of twelve (12) months from the last date of employment of the Executive with the Company, (B) the date upon which Executive and/or Executive's eligible

dependents becomes covered under similar plans, or (C) the expiration of Executive's and Executive's eligible dependents' (as applicable) eligibility for continuation coverage under COBRA.

(iv) Equity. One hundred percent (100%) of the unvested portion of the Executive's then-outstanding equity awards (the "*Awards*") will immediately vest and, to the extent applicable, become exercisable, as of the date of such termination. To the extent that an Award is subject to performance-based vesting at the time of such termination, such performance goals will be deemed achieved at one hundred percent (100%) of target levels and all other terms and conditions met, unless specifically provided otherwise under the applicable Award agreement. The Awards will remain exercisable, to the extent applicable, following Executive's termination for the period prescribed in the applicable equity plan and agreement for each Award.

(c) Other Termination. If Executive's employment with the Company terminates other than as set forth in Section 3(a) or 3(b) above, then (i) all vesting will terminate immediately with respect to Executive's outstanding Awards, (ii) all payments of compensation by the Company to Executive hereunder will terminate immediately (except as to amounts already earned), and (iii) Executive will only be eligible for severance benefits in accordance with the Company's established policies, if any, as then in effect.

(d) Accrued Amounts. On any termination of Executive's employment with the Company, Executive will be entitled to receive all accrued but unpaid vacation, expense reimbursements, wages, and other benefits due to Executive under any Company-provided plans, policies, and arrangements.

(e) Non-duplication of Payment or Benefits. Notwithstanding any provision of this Agreement to the contrary, if Executive is entitled to any cash severance, continued health coverage severance benefits, vesting acceleration of any Awards, or other severance or separation benefits similar to those provided under this Agreement, by operation of applicable law or under a plan, policy, contract, or arrangement sponsored by or to which the Company is a party other than this Agreement ("Other Benefits"), then the corresponding severance payments and benefits under this Agreement will be reduced by the amount of Other Benefits paid or provided to Executive. For the avoidance of doubt, in the event of a Qualifying Termination under which Executive becomes entitled to severance under Section 3(b), any severance payments and benefits to be provided to the Executive under Section 3(b) will be reduced by the corresponding severance payments or benefits, as applicable, that already were provided to the Executive under Section 3(a).

4. Conditions to Receipt of Severance.

(a) Release of Claims Agreement. The receipt of any severance payments or benefits pursuant to this Agreement is subject to Executive signing and not revoking a separation agreement and release of claims in a form acceptable to the Company (the "*Release*"), which must become effective and irrevocable no later than the sixtieth (60^{th}) day following Executive's termination of employment (the "*Release Deadline Date*"). If the Release does not become effective and irrevocable by the Release Deadline Date, Executive will forfeit any right to severance payments or benefits under this Agreement. No severance payments and benefits under Section 3(a) or 3(b) of this Agreement will be paid or provided until the Release becomes effective and irrevocable, and any such severance payments and benefits otherwise payable between the date of Executive's termination of employment and the date the Release becomes effective and irrevocable (including, if applicable, the lump sum cash payment under Section 4(c) below) will be paid, subject to the requirements of

Section 4(d) below, on the Company's first regularly scheduled payroll date on or following the date the Release becomes effective and irrevocable. Any restricted stock units, performance units, performance shares, and/or similar full value awards that accelerate vesting under this Agreement ("Full Value Awards") will be settled (subject to Section 4(d) below and the terms of any award agreement or other Company plan, policy, or arrangement governing the settlement timing of such award to the extent such terms specifically require different payment timing in order to comply with the requirements of Section 409A, as applicable (the "Full Value Settlement Provisions"), on a date within ten (10) days following the date the Release becomes effective and irrevocable.

(b) Confidential Information and Invention Assignment Agreements. Executive's receipt of any payments or benefits under Sections 3(a) and 3(b) will be subject to Executive continuing to comply with the terms of any confidential information and invention assignment agreement executed by Executive in favor of the Company and the provisions of this Agreement.

(c) COBRA Severance Limitations. Notwithstanding the provisions of Sections 3(a)(ii) and 3(b)(ii), if the Company determines in its sole discretion that it cannot provide the COBRA Severance without potentially violating applicable laws (including, without limitation, Section 2716 of the Public Health Service Act and the Employee Retirement Income Security Act of 1974, as amended), then in lieu of such COBRA Severance, and subject to any delay required by this Section 4, the Company will provide to Executive a taxable lump sum cash payment in an amount equal to the product of (x) the number of months of Salary severance specified in Section 3(a)(i) or 3(b)(i), as applicable, multiplied by (y) the monthly COBRA premium that Executive otherwise would be required to pay to continue the group health, dental and vision coverage for Executive and Executive's eligible dependents, as applicable, as in effect on the date of termination of Executive's employment (which amount will be based on the premium for the first month of COBRA coverage for Executive and Executive's eligible dependents), which payment will be made regardless of whether Executive elects COBRA continuation coverage (the "*Taxable Payment*"). For the avoidance of doubt, the Taxable Payment may be used for any purpose, including, but not limited to continuation coverage under COBRA, and will be subject to all applicable tax withholdings. Notwithstanding anything to the contrary under this Agreement, if the Company determines in its sole discretion at any time that it cannot provide the COBRA Severance or the Taxable Payment without violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act and the Employee Retirement Income Security Act of 1974, as amended), Executive will not receive any COBRA Severance or Taxable Amount under this Agreement.

(d) Section 409A.

(i) Notwithstanding anything to the contrary in this Agreement, no severance payments or benefits payable to Executive, if any, pursuant to this Agreement that, when considered together with any other severance payments or separation benefits, is considered deferred compensation under Internal Revenue Code Section 409A (together, the "*Deferred Payments*") will be payable until Executive has a "separation from service" within the meaning of Section 409A of the Internal Revenue Code of 1986, as amended (the "*Code*"), and the Treasury Regulations and guidance thereunder, and any applicable state law equivalent, as each may be promulgated, amended or modified from time to time ("*Section 409A*"). Similarly, no severance payable to Executive, if any, pursuant to this Agreement that otherwise would be exempt from Section 409A pursuant to Treasury Regulations Section 1.409A-1(b)(9) will be payable until Executive has a "separation from service" within the meaning of Section 409A. To the extent required to be exempt from or comply with

Section 409A, references to the termination of Executive's employment or similar phrases used in this Agreement will mean Executive's "separation from service" within the meaning of Section 409A.

(ii) Any severance payments or benefits under this Agreement that would be considered Deferred Payments will be paid on, or, in the case of installments, will not commence until, the sixtieth (60th) day following Executive's separation from service, or, if later, such time as required by Section 4(d)(iii) (or with respect to Full Value Awards, such time or times as required by any applicable Full Value Settlement Provisions). Except as required by Section 4(d)(iii) and any applicable Full Value Settlement Provisions, any Deferred Payments payable in installments that would have been made to Executive during the sixty (60) day period immediately following Executive's separation from service but for the preceding sentence will be paid to Executive on the sixtieth (60th) day following Executive's separation from service and the remaining payments shall be made as provided in this Agreement.

(iii) Further, if Executive is a "specified employee" within the meaning of Section 409A at the time of Executive's separation from service (other than due to death), any Deferred Payments that otherwise are payable within the first six (6) months following Executive's separation from service will become payable on the first payroll date that occurs on or after the date six (6) months and one (1) day following the date of Executive's separation from service. All subsequent Deferred Payments, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, in the event of Executive's death following Executive's separation from service but prior to the six (6) month anniversary of Executive's separation from service (or any later delay date), then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of Executive's death and all other Deferred Payments will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under the Agreement is intended to constitute a separate payment for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

(iv) Any amount paid under this Agreement that satisfies the requirements of the "short-term deferral" rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Deferred Payments for purposes of clause (i) above. Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that is within the limit set forth thereunder will not constitute Deferred Payments for purposes of clause (i) above.

(v) The foregoing provisions are intended to comply with, or be exempt from, the requirements of Section 409A so that none of the severance payments and benefits to be provided under the Agreement will be subject to the additional tax imposed under Section 409A, and any ambiguities and ambiguous terms herein will be interpreted to so comply or be exempt. Executive and the Company agree to work together in good faith to consider amendments to the Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any additional tax or income recognition prior to actual payment to Executive under Section 409A. In no event will the Company or any of its subsidiaries or other affiliates have any obligation, responsibility or liability to reimburse, indemnify or hold harmless Executive for any taxes imposed, or other costs incurred, as result of Section 409A.

5. Limitation on Payments. In the event that the severance and other benefits provided for in this Agreement or otherwise that Executive would receive from the Company or any other party

whether in connection with the provisions of this Agreement or otherwise (the "Payments") would (i) constitute "parachute payments" within the meaning of Section 280G of the Code and (ii) but for this Section 5, would be subject to the excise tax imposed by Section 4999 of the Code, then the Payments will be either:

(a) delivered in full, or

(b) delivered as to such lesser extent which would result in no portion of such Payments being subject to excise tax under Section 4999 of the Code,

whichever of the foregoing amounts, taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, results in the receipt by Executive on an after-tax basis, of the greatest amount of Payments, notwithstanding that all or some portion of such Payments may be taxable under Section 4999 of the Code. If a reduction in severance and other benefits constituting "parachute payments" is necessary so that benefits are delivered to a lesser extent, reduction will occur in the following order: (i) reduction of cash payments in reverse chronological order (that is, the cash payment owed on the latest date following the occurrence of the event triggering the excise tax under Code Section 4999 will be the first cash payment to be reduced); (ii) cancellation of equity awards granted "contingent on a change in ownership or control" (within the meaning of Code Section 280G) in the reverse order of date of grant of the equity awards (that is, the most recently granted equity awards will be cancelled first), (iii) reduction of accelerated vesting of equity awards in the reverse order of date of grant of the equity awards (that is, the vesting of the most recently granted equity awards will be cancelled first); (iv) reduction of employee benefits in reverse chronological order (that is, the benefit owed on the latest date following the occurrence of the event triggering such excise tax will be the first benefit to be reduced). In no event will Executive have any discretion with respect to the ordering of Payment reductions. Executive will be solely responsible for the payment of all personal tax liability that is incurred as a result of the payments and benefits received under this Agreement, and neither the Company nor any parent, subsidiary or other affiliate of the Company will have any responsibility, liability or obligation to reimburse, indemnify or hold harmless Executive for any of those payments of personal tax liability.

Unless the Company and Executive otherwise agree in writing, any determination required under this Section 5 will be made in writing by a nationally recognized accounting or valuation firm (the "*Firm*") selected by the Company, whose determination will be conclusive and binding upon Executive and the Company for all purposes. For purposes of making the calculations required by this Section 5, the Firm may make reasonable assumptions and approximations concerning applicable taxes and may rely on reasonable, good faith interpretations concerning the application of Sections 280G and 4999 of the Code. The Company and Executive will furnish to the Firm such information and documents as the Firm may reasonably request in order to make a determination under this Section. The Company will bear all costs and make all payments required to be made to the Firm for the Firm's services that are rendered in connection with any calculations contemplated by this Section 5. The Company will have no liability to Executive for the determinations of the Firm.

6. Definition of Terms. For purposes of this Agreement, the following terms referred to in this Agreement will have the following meanings:

(a) Cause. "*Cause*" means (i) conviction of any felony; (ii) conviction of any crime involving moral turpitude or dishonesty that causes, or is likely to cause, material harm to the Company; (iii) participation in a fraud or willful act of dishonesty against the Company that causes,

or is likely to cause, material harm to the Company; (iv) intentional and material damage to the Company's property; or (v) material breach of the Company's Proprietary Information and Inventions Agreement.

(b) Change in Control. "*Change in Control*" means the first occurrence of any of the following on or after the Effective Date:

(i) A change in the ownership of the Company which occurs on the date that any one person, or more than one person acting as a group ("*Person*"), acquires ownership of the stock of the Company that, together with the stock held by such Person, constitutes more than 50% of the total voting power of the stock of the Company; provided, however, that for purposes of this subsection (i), the acquisition of additional stock by any one Person, who is considered to own more than 50% of the total voting power of the stock of the Company will not be considered a Change in Control. Further, if the stockholders of the Company immediately before such change in ownership continue to retain immediately after the change in ownership, in substantially the same proportions as their ownership of shares of the Company's voting stock immediately prior to the change in ownership, direct or indirect beneficial ownership of fifty percent (50%) or more of the total voting power of the stock of the Company or of the ultimate parent entity of the Company, such event will not be considered a Change in Control under this subsection (i). For this purpose, indirect beneficial ownership will include, without limitation, an interest resulting from ownership of the voting securities of one or more corporations or other business entities which own the Company, as the case may be, either directly or through one or more subsidiary corporations or other business entities; or

(ii) A change in the effective control of the Company which occurs on the date that a majority of members of the Board (each, a "*Director*") is replaced during any twelve (12) month period by Directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. For purposes of this subsection (ii), if any Person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same Person will not be considered a Change in Control; or

(iii) A change in the ownership of a substantial portion of the Company's assets which occurs on the date that any Person acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such Person) assets from the Company that have a total gross fair market value equal to or more than 50% of the total gross fair market value of all of the assets of the Company immediately prior to such acquisition or acquisitions; provided, however, that for purposes of this subsection (iii), the following will not constitute a change in the ownership of a substantial portion of the Company's assets: (A) a transfer to an entity that is controlled by the Company's stockholders immediately after the transfer, or (B) a transfer of assets by the Company to: (1) a stockholder of the Company (immediately before the asset transfer) in exchange for or with respect to the Company's stock, (2) an entity, 50% or more of the total value or voting power of which is owned, directly or indirectly, by the Company, (3) a Person, that owns, directly or indirectly, 50% or more of the total value or voting power of all the outstanding stock of the Company, or (4) an entity, at least 50% of the total value or voting power of which is owned, directly or indirectly, by a Person described in this subsection (iii)(B)(3). For purposes of this subsection (iii), gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

For purposes of this definition of Change in Control, persons will be considered to be acting as a group if they are owners of a corporation that enters into a merger, consolidation, purchase or acquisition of stock, or similar business transaction with the Company.

Notwithstanding the foregoing, a transaction will not be deemed a Change in Control unless the transaction qualifies as a change in control event within the meaning of Section 409A.

Further and for the avoidance of doubt, a transaction will not constitute a Change in Control if: (i) its sole purpose is to change the jurisdiction of the Company's incorporation, or (ii) its sole purpose is to create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

(c) Change in Control Period. "*Change in Control Period*" means the period beginning upon the date that is three (3) months prior to a Change in Control and continuing through the date that is twelve (12) months following a Change in Control.

(d) Disability. "*Disability*" means Executive is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than twelve (12) months.

(e) Good Reason. "*Good Reason*" means Executive's termination of his or her employment with the Company within thirty (30) days following the expiration of any cure period (discussed below) following the occurrence of one or more of the following, without Executive's express written consent: (i) a material reduction of Executive's duties, authority, or responsibilities, relative to Employee's duties, authority, or responsibilities as in effect immediately prior to such reduction; *provided, however,* that a reduction in duties, authority, or responsibilities solely by virtue of the Company being acquired and made part of a larger entity (for example, where Executive retains essentially the same responsibility and duties of the subsidiary, business unit or division substantially containing the Company's business following a Change in Control) shall not constitute "Good Reason"; (ii) a material reduction by the Company in Executive's annualized base pay as in effect immediately prior to such reduction (in other words, a reduction of more than ten percent (10%) of Executive's annualized base compensation in any one year, other than a reduction applicable to executives generally that does not adversely affect Executive to a greater extent than other similarly situated executives); (iii) the relocation of Executive's principal place of performing his or her duties as an employee of the Company by more than fifty (50) miles; or (iv) the failure of the Company to obtain the assumption of this Agreement by a successor. In order for an event to qualify as Good Reason, Executive must not terminate employment with the Company without first providing the Company with written notice of the acts or omissions constituting the grounds for "Good Reason" within ninety (90) days of the initial existence of the grounds for "Good Reason" and a reasonable cure period of not less than thirty (30) days following the date of such notice. To the extent Executive's primary work location is not the Company's corporate offices due to a shelter-in-place order, quarantine order, or similar work-from-home requirement that applies to Executive, Executive's primary office location, from which a change in location under the foregoing clause (iii) will be measured, will be considered the Company's office location where Executive's employment with the Company primarily was based immediately prior to the commencement of such shelter-in-place order, quarantine order, or similar work-from-home requirement.

(f) Qualifying Termination. "*Qualifying Termination*" means either (i) the Company terminates Executive's employment with the Company for a reason other than (A) Cause, (B) Executive's death, or (C) Executive's Disability or (ii) Executive resigns for Good Reason.

(g) Salary. "*Salary*" means Executive's base salary as in effect immediately prior to the termination of Executive's employment (unless such termination occurs as a result of clause (ii) of the definition of "Good Reason" under Section 6(e), in which case the amount will be equal to Executive's base salary as in effect immediately prior to such reduction) or, if greater in the case of a Qualifying Termination during the Change in Control Period, as in effect immediately prior to the Change in Control.

7. Successors.

(a) The Company's Successors. Any successor to the Company (whether direct or indirect and whether by purchase, merger, consolidation, liquidation or otherwise) to all or substantially all of the Company's business and/or assets will assume the obligations under this Agreement and agree expressly to perform the obligations under this Agreement in the same manner and to the same extent as the Company would be required to perform such obligations in the absence of a succession. For all purposes under this Agreement, the term "Company" will include any successor to the Company's business and/or assets which executes and delivers the assumption agreement described in this Section 7(a) or which becomes bound by the terms of this Agreement by operation of law.

(b) Executive's Successors. The terms of this Agreement and all rights of Executive hereunder will inure to the benefit of, and be enforceable by, Executive's personal or legal representatives, executors, administrators, successors, heirs, distributees, devisees and legatees. Notwithstanding the foregoing, none of the rights of Executive to receive any form of compensation payable pursuant to this Agreement may be assigned or transferred except by will or the laws of descent and distribution. Any other attempted assignment, transfer, conveyance, or other disposition of Executive's right to compensation or other benefits will be null and void.

8. Notice.

(a) General. Notices and all other communications contemplated by this Agreement will be in writing and will be deemed to have been duly given (a) upon actual delivery to the party to be notified, (b) twenty-four (24) hours after confirmed facsimile transmission, (c) one (1) business day after deposit with a recognized overnight courier, or (d) three (3) business days after deposit with the U.S. Postal Service by first class certified or registered mail, return receipt requested, postage prepaid, addressed: (i) if to Executive, at the address Executive will have most recently furnished to the Company in writing, or (ii) if to the Company, to its corporate headquarters and all notices will be directed to the General Counsel of the Company.

(b) Notice of Termination. Any termination of Executive's employment by the Company for Cause or by Executive for Good Reason or as a result of a voluntary resignation will be communicated by a notice of termination to the other party hereto given in accordance with Section 8(a) of this Agreement. Such notice will indicate the specific termination provision in this Agreement relied upon, will set forth in reasonable detail the facts and circumstances claimed to provide a basis for termination under the provision so indicated, and will specify the termination date (which will be not more than thirty (30) days after the giving of such notice or in the case of

Executive's resignation for Good Reason, in accordance with the requirements under Section 6(e)). The failure by Executive to include in the notice any fact or circumstance which contributes to a showing of Good Reason will not waive any right of Executive hereunder or preclude Executive from asserting such fact or circumstance in enforcing Executive's rights hereunder.

(c) Resignation. The termination of Executive's employment for any reason also will constitute, without any further required action by Executive, Executive's voluntary resignation from all officer and/or director positions held at the Company or any of its subsidiaries or affiliates, and at the Board's request, Executive will execute any documents reasonably necessary to reflect the resignations.

9. Miscellaneous Provisions.

(a) No Duty to Mitigate. Executive will not be required to mitigate the amount of any payment contemplated by this Agreement, nor will any such payment be reduced by any earnings that Executive may receive from any other source except as specified in Sections 3(e), 4(d) and 5.

(b) Waiver. No provision of this Agreement will be modified, waived or discharged unless the modification, waiver or discharge is agreed to in writing and signed by Executive and by an authorized officer of the Company (other than Executive). No waiver by either party of any breach of, or of compliance with, any condition or provision of this Agreement by the other party will be considered a waiver of any other condition or provision or of the same condition or provision at another time.

(c) Headings. All captions and section headings used in this Agreement are for convenient reference only and do not form a part of this Agreement.

(d) Entire Agreement. This Agreement constitutes the entire agreement of the parties hereto and supersedes in their entirety all prior representations, understandings, undertakings or agreements (whether oral or written and whether expressed or implied) of the parties. No waiver, alteration, or modification of any of the provisions of this Agreement will be binding unless in writing and signed by duly authorized representatives of the parties hereto and which specifically mention this Agreement.

(e) Choice of Law. The validity, interpretation, construction, and performance of this Agreement will be governed by the laws of the State of California (with the exception of its conflict of laws provisions). Any claims or legal actions by one party against the other arising out of the relationship between the parties contemplated herein (whether or not arising under this Agreement) will be commenced or maintained in any state or federal court located in San Mateo County, California, and Executive and the Company hereby submit to the jurisdiction and venue of any such court.

(f) Severability. The invalidity, illegality, or unenforceability of any provision or provisions of this Agreement will not affect the validity, legality or enforceability of any other provision hereof, which will remain in full force and effect, and this Agreement will be construed and enforced as if the invalid, illegal, or unenforceable provision had not been included.

(g) Withholding. The Company (and any parent, subsidiary or other affiliate of the Company, as applicable) will have the right and authority to deduct from any payments or benefits all

applicable federal, state, local, and/or non-U.S. taxes or other required withholdings and payroll deductions ("Withholdings"). Prior to the payment of any amounts or provision of any benefits under this Agreement, the Company (and any parent, subsidiary or other affiliate of the Company, as applicable) is permitted to deduct or withhold, or require Executive to remit to the Company, an amount sufficient to satisfy any applicable Withholdings with respect to such payments and benefits. Neither the Company nor any parent, subsidiary or other affiliate of the Company will have any responsibility, liability or obligation to pay Executive's taxes arising from or relating to any payments or benefits under this Agreement.

(h) Counterparts. This Agreement may be executed in counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

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IN WITNESS WHEREOF, each of the parties has executed this Agreement, in the case of the Company by its duly authorized officer, as of the Effective Date set forth above.

COMPANY PACIFIC BIOSCIENCES OF CALIFORNIA, INC.

By: _____

Name: _____

Title: _____

EXECUTIVE By: _____

Name: [_____]

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.

AMENDED AND RESTATED CHANGE IN CONTROL AND SEVERANCE AGREEMENT

This Amended and Restated Change in Control and Severance Agreement (the "***Agreement***") is made and entered into by and between Christian O. Henry ("***Executive***") and Pacific Biosciences of California, Inc., a Delaware corporation (the "***Company***"), effective as of December 11, 2024 (the "***Effective Date***"), and supersedes and replaces the Change in Control and Severance Agreement entered into between the Company and Executive and effective February 3, 2021 (the "***Prior Agreement***").

RECITALS

1. It is expected that the Company from time to time will consider the possibility of an acquisition by another company or other change in control. The Board of Directors of the Company (the "***Board***") recognizes that such considerations can be a distraction to Executive and can cause Executive to consider alternative employment opportunities. The Board has determined that it is in the best interests of the Company and its stockholders to assure that the Company will have the continued dedication and objectivity of Executive, notwithstanding the possibility, threat or occurrence of such a termination of employment or the occurrence of a Change in Control (as defined herein) of the Company.

2. The Board believes that it is in the best interests of the Company and its stockholders to provide Executive with an incentive to continue Executive's employment and to motivate Executive to maximize the value of the Company for the benefit of its stockholders.

3. The Board believes that it is imperative to provide Executive with certain severance benefits upon Executive's termination of employment in connection with a Change in Control. These benefits will provide Executive with enhanced financial security, incentive and encouragement to remain with the Company.

4. Certain capitalized terms used in the Agreement are defined in Section 6 below.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

1. Term of Agreement. This Agreement will have an initial term of three (3) years commencing on the Effective Date (the "***Initial Term***"). On the third anniversary of the Effective Date, this Agreement will renew automatically for additional one (1) year terms (each an "***Additional Term***"), unless either party provides the other party with written notice of non-renewal at least sixty (60) days prior to the date of automatic renewal. Notwithstanding the foregoing provisions of this

paragraph, if a Change in Control occurs when there are fewer than twelve (12) months remaining during the Initial Term or an Additional Term, the term of this Agreement will extend automatically through the date that is twelve (12) months following the effective date of the Change in Control. If Executive becomes entitled to benefits under Section 3(a) or Section 3(b) during the term of this Agreement, the Agreement will not terminate until all of the obligations of the parties hereto with respect to this Agreement have been satisfied.

2. At-Will Employment. The Company and Executive acknowledge that Executive's employment is and will continue to be at-will, as defined under applicable law. No payments, benefits, or provisions under this Agreement will confer upon Executive any right to continue Executive's employment with the Company, nor will they interfere with or limit in any way the right of the Company or Executive to terminate such relationship at any time, with or without cause, to the extent permitted by applicable laws.

3. Severance Benefits.

(a) Termination without Cause or Other than Death or Disability or Resignation for Good Reason Other than During the Change in Control Period. If a Qualifying Termination occurs other than during the Change in Control Period, then subject to Section 4, Executive will receive the following severance from the Company:

(i) Base Salary Severance. Executive will receive a lump sum cash payment equal to eighteen (18) months of Executive's Salary (unless such termination occurs as a result of clause (ii) of the definition of Good Reason, in which case the amount will be equal to eighteen (18) months of Executive's Salary as in effect immediately prior to such Salary reduction).

(ii) Continued Employee Benefits. If Executive elects continuation coverage pursuant to the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("***COBRA***") for Executive and Executive's eligible dependents (as applicable), within the time period prescribed pursuant to COBRA, Executive will receive Company-paid group health, dental and vision coverage for Executive and Executive's eligible dependents, as applicable, at the coverage levels in effect immediately prior to the termination of Executive's employment (the "***COBRA Severance***") until the earliest of: (A) a period of eighteen (18) months from the last date of employment of the Executive with the Company, (B) the date upon which Executive and/or Executive's eligible dependents becomes covered under similar plans, or (C) the expiration of Executive's and Executive's eligible dependents' (as applicable) eligibility for continuation coverage under COBRA.

(iii) Vesting Acceleration of Equity Awards. Each of Executive's then-outstanding equity awards (the "***Equity Awards***") that are, as of the date of termination of employment with the Company, to vest solely based on continued service to the Company, will immediately vest as to the number of shares of Common Stock subject to each such Equity Award that otherwise would have vested had Executive remained an employee of the Company through the six (6) month anniversary of the Qualifying Termination. For the avoidance of doubt, in the event of the Executive's Qualifying Termination outside the Change in Control Period, any unvested portion of the Executive's then-outstanding Equity Awards will remain outstanding until the earlier of (x) 3 months following the Qualifying Termination or (y) the occurrence of a Change in Control, solely so that any benefits

due on a Qualifying Termination during the Change in Control Period can be provided if a Change in Control occurs within 3 months following the Qualifying Termination (provided that in no event will the Executive's stock options or similar equity awards remain outstanding beyond the equity award's maximum term to expiration). If no Change in Control occurs within 3 months following a Qualifying Termination outside the Change in Control Period, any unvested portion of the Executive's equity awards automatically and permanently will be forfeited on the 3-month anniversary of the day following the date of such Qualifying Termination without having vested.

(b) Termination without Cause or Other than Death or Disability or Resignation for Good Reason During the Change in Control Period. If a Qualifying Termination occurs during the Change in Control Period, then subject to Section 4, Executive will receive the following severance from the Company:

(i) Base Salary Severance. Executive will receive a lump sum cash payment equal to eighteen (18) months of Executive's Salary (unless such termination occurs as a result of clause (ii) of the definition of Good Reason, in which case the amount will be equal to eighteen (18) months of Executive's Salary as in effect immediately prior to such Salary reduction).

(ii) Prorated Target Bonus Severance. Executive will receive a lump sum cash payment equal to Executive's annualized target bonus in effect for the year in which the Qualifying Termination occurs, provided that such amount will be prorated based on a fraction, the numerator of which is the number of days during which Executive was employed with the Company (or its successor) in the year that the Qualifying Termination occurs, and the denominator of which is the total number of days in such year (the "***Prorated Bonus Severance***")

(iii) Continued Employee Benefits. If Executive elects continuation coverage pursuant to COBRA for Executive and Executive's eligible dependents (as applicable), within the time period prescribed pursuant to COBRA, the Company will provide the COBRA Severance until the earliest of: (A) a period of eighteen (18) months from the last date of employment of the Executive with the Company, (B) the date upon which Executive and/or Executive's eligible dependents becomes covered under similar plans, or (C) the expiration of Executive's and Executive's eligible dependents' (as applicable) eligibility for continuation coverage under COBRA.

(iv) Equity. One hundred percent (100%) of the unvested portion of the Executive's then-outstanding Equity Awards will immediately vest and, to the extent applicable, become exercisable, as of the date of such termination. To the extent that an Equity Award is subject to performance-based vesting at the time of such termination, such performance goals will be deemed achieved at one hundred percent (100%) of target levels and all other terms and conditions met, unless specifically provided otherwise under the applicable Equity Award agreement. The Equity Awards will remain exercisable, to the extent applicable, following Executive's termination for the period prescribed in the applicable equity plan and agreement for each Equity Award.

(c) Other Termination. If Executive's employment with the Company terminates other than as set forth in Section 3(a) or 3(b) above, then (i) all vesting will terminate immediately with respect to Executive's outstanding Equity Awards, (ii) all payments of compensation by the Company to Executive hereunder will terminate immediately (except as to amounts already earned),

and (iii) Executive will only be eligible for severance benefits in accordance with the Company's established policies, if any, as then in effect.

(d) Accrued Amounts. On any termination of Executive's employment with the Company, Executive will be entitled to receive all accrued but unpaid vacation, expense reimbursements, wages, and other benefits due to Executive under any Company-provided plans, policies, and arrangements.

(e) Non-duplication of Payment or Benefits. Notwithstanding any provision of this Agreement to the contrary, if Executive is entitled to any cash severance, continued health coverage severance benefits, vesting acceleration of any Equity Awards, or other severance or separation benefits similar to those provided under this Agreement, by operation of applicable law or under a plan, policy, contract, or arrangement sponsored by or to which the Company is a party other than this Agreement ("***Other Benefits***"), then the corresponding severance payments and benefits under this Agreement will be reduced by the amount of Other Benefits paid or provided to Executive. For the avoidance of doubt, in the event of a Qualifying Termination under which Executive becomes entitled to severance under Section 3(b), any severance payments and benefits to be provided to the Executive under Section 3(b) will be reduced by the corresponding severance payments or benefits, as applicable, that already were provided to the Executive under Section 3(a).

4. Conditions to Receipt of Severance.

(a) Release of Claims Agreement. The receipt of any severance payments or benefits pursuant to this Agreement is subject to Executive signing and not revoking a separation agreement and release of claims in a form acceptable to the Company (the "***Release***"), which must become effective and irrevocable no later than the sixtieth (60^{th}) day following Executive's termination of employment (the "***Release Deadline Date***"). If the Release does not become effective and irrevocable by the Release Deadline Date, Executive will forfeit any right to severance payments or benefits under this Agreement. No severance payments and benefits under Section 3(a) or 3(b) of this Agreement will be paid or provided until the Release becomes effective and irrevocable, and any such severance payments and benefits otherwise payable between the date of Executive's termination of employment and the date the Release becomes effective and irrevocable (including, if applicable, the lump sum cash payment under Section 4(c) below) will be paid, subject to the requirements of Section 4(d) below, on the Company's first regularly scheduled payroll date on or following the date the Release becomes effective and irrevocable. Any restricted stock units, performance units, performance shares, and/or similar full value awards that accelerate vesting under this Agreement ("***Full Value Awards***") will be settled (subject to Section 4(d) below and the terms of any award agreement or other Company plan, policy, or arrangement governing the settlement timing of such award to the extent such terms specifically require different payment timing in order to comply with the requirements of Section 409A, as applicable (the "***Full Value Settlement Provisions***"), on a date within ten (10) days following the date the Release becomes effective and irrevocable.

(b) Confidential Information and Invention Assignment Agreements. Executive's receipt of any payments or benefits under Sections 3(a) and 3(b) will be subject to Executive continuing to comply with the terms of any confidential information and invention assignment agreement executed by Executive in favor of the Company and the provisions of this Agreement.

(c) COBRA Severance Limitations. Notwithstanding the provisions of Sections 3(a)(ii) and 3(b)(ii), if the Company determines in its sole discretion that it cannot provide the COBRA Severance without potentially violating applicable laws (including, without limitation, Section 2716 of the Public Health Service Act and the Employee Retirement Income Security Act of 1974, as amended), then in lieu of such COBRA Severance, and subject to any delay required by this Section 4, the Company will provide to Executive a taxable lump sum cash payment in an amount equal to the product of (x) the number of months of Salary severance specified in Section 3(a)(i) or 3(b)(i), as applicable, multiplied by (y) the monthly COBRA premium that Executive otherwise would be required to pay to continue the group health, dental and vision coverage for Executive and Executive's eligible dependents, as applicable, as in effect on the date of termination of Executive's employment (which amount will be based on the premium for the first month of COBRA coverage for Executive and Executive's eligible dependents), which payment will be made regardless of whether Executive elects COBRA continuation coverage (the "***Taxable Payment***"). For the avoidance of doubt, the Taxable Payment may be used for any purpose, including, but not limited to continuation coverage under COBRA, and will be subject to all applicable tax withholdings. Notwithstanding anything to the contrary under this Agreement, if the Company determines in its sole discretion at any time that it cannot provide the COBRA Severance or the Taxable Payment without violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act and the Employee Retirement Income Security Act of 1974, as amended), Executive will not receive any COBRA Severance or Taxable Amount under this Agreement.

(d) Section 409A.

(i) Notwithstanding anything to the contrary in this Agreement, no severance payments or benefits payable to Executive, if any, pursuant to this Agreement that, when considered together with any other severance payments or separation benefits, is considered deferred compensation under Internal Revenue Code Section 409A (together, the "***Deferred Payments***") will be payable until Executive has a "separation from service" within the meaning of Section 409A of the Internal Revenue Code of 1986, as amended (the "***Code***"), and the Treasury Regulations and guidance thereunder, and any applicable state law equivalent, as each may be promulgated, amended or modified from time to time ("***Section 409A***"). Similarly, no severance payable to Executive, if any, pursuant to this Agreement that otherwise would be exempt from Section 409A pursuant to Treasury Regulations Section 1.409A-1(b)(9) will be payable until Executive has a "separation from service" within the meaning of Section 409A. To the extent required to be exempt from or comply with Section 409A, references to the termination of Executive's employment or similar phrases used in this Agreement will mean Executive's "separation from service" within the meaning of Section 409A.

(ii) Any severance payments or benefits under this Agreement that would be considered Deferred Payments will be paid on, or, in the case of installments, will not commence until, the sixtieth (60^{th}) day following Executive's separation from service, or, if later, such time as required by Section 4(d)(iii) (or with respect to Full Value Awards, such time or times as required by any applicable Full Value Settlement Provisions). Except as required by Section 4(d)(iii) and any applicable Full Value Settlement Provisions, any Deferred Payments payable in installments that would have been made to Executive during the sixty (60) day period immediately following Executive's separation from service but for the preceding sentence will be paid to Executive on the

sixtieth (60th) day following Executive's separation from service and the remaining payments shall be made as provided in this Agreement.

(iii)Further, if Executive is a "specified employee" within the meaning of Section 409A at the time of Executive's separation from service (other than due to death), any Deferred Payments that otherwise are payable within the first six (6) months following Executive's separation from service will become payable on the first payroll date that occurs on or after the date six (6) months and one (1) day following the date of Executive's separation from service. All subsequent Deferred Payments, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, in the event of Executive's death following Executive's separation from service but prior to the six (6) month anniversary of Executive's separation from service (or any later delay date), then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of Executive's death and all other Deferred Payments will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under the Agreement is intended to constitute a separate payment for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

(iv)Any amount paid under this Agreement that satisfies the requirements of the "short-term deferral" rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Deferred Payments for purposes of clause (i) above. Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that is within the limit set forth thereunder will not constitute Deferred Payments for purposes of clause (i) above.

(v) The foregoing provisions are intended to comply with, or be exempt from, the requirements of Section 409A so that none of the severance payments and benefits to be provided under the Agreement will be subject to the additional tax imposed under Section 409A, and any ambiguities and ambiguous terms herein will be interpreted to so comply or be exempt. Executive and the Company agree to work together in good faith to consider amendments to the Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any additional tax or income recognition prior to actual payment to Executive under Section 409A. In no event will the Company or any of its subsidiaries or other affiliates have any obligation, responsibility or liability to reimburse, indemnify or hold harmless Executive for any taxes imposed, or other costs incurred, as result of Section 409A.

5. Limitation on Payments. In the event that the severance and other benefits provided for in this Agreement or otherwise that Executive would receive from the Company or any other party whether in connection with the provisions of this Agreement or otherwise (the "***Payments***") would (i) constitute "parachute payments" within the meaning of Section 280G of the Code and (ii) but for this Section 5, would be subject to the excise tax imposed by Section 4999 of the Code, then the Payments will be either:

(a) delivered in full, or

(b) delivered as to such lesser extent which would result in no portion of such Payments being subject to excise tax under Section 4999 of the Code,

whichever of the foregoing amounts, taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, results in the receipt by Executive on an after-tax basis, of the greatest amount of Payments, notwithstanding that all or some portion of such Payments may be taxable under Section 4999 of the Code. If a reduction in severance and other benefits constituting "parachute payments" is necessary so that benefits are delivered to a lesser extent, reduction will occur in the following order: (i) reduction of cash payments in reverse chronological order (that is, the cash payment owed on the latest date following the occurrence of the event triggering the excise tax under Code Section 4999 will be the first cash payment to be reduced); (ii) cancellation of equity awards granted "contingent on a change in ownership or control" (within the meaning of Code Section 280G) in the reverse order of date of grant of the equity awards (that is, the most recently granted equity awards will be cancelled first), (iii) reduction of accelerated vesting of equity awards in the reverse order of date of grant of the equity awards (that is, the vesting of the most recently granted equity awards will be cancelled first); (iv) reduction of employee benefits in reverse chronological order (that is, the benefit owed on the latest date following the occurrence of the event triggering such excise tax will be the first benefit to be reduced). In no event will Executive have any discretion with respect to the ordering of Payment reductions. Executive will be solely responsible for the payment of all personal tax liability that is incurred as a result of the payments and benefits received under this Agreement, and neither the Company nor any parent, subsidiary or other affiliate of the Company will have any responsibility, liability or obligation to reimburse, indemnify or hold harmless Executive for any of those payments of personal tax liability.

Unless the Company and Executive otherwise agree in writing, any determination required under this Section 5 will be made in writing by a nationally recognized accounting or valuation firm (the "***Firm***") selected by the Company, whose determination will be conclusive and binding upon Executive and the Company for all purposes. For purposes of making the calculations required by this Section 5, the Firm may make reasonable assumptions and approximations concerning applicable taxes and may rely on reasonable, good faith interpretations concerning the application of Sections 280G and 4999 of the Code. The Company and Executive will furnish to the Firm such information and documents as the Firm may reasonably request in order to make a determination under this Section. The Company will bear all costs and make all payments required to be made to the Firm for the Firm's services that are rendered in connection with any calculations contemplated by this Section 5. The Company will have no liability to Executive for the determinations of the Firm.

6. Definition of Terms. For purposes of this Agreement, the following terms referred to in this Agreement will have the following meanings:

(a) Cause. "***Cause***" means (i) conviction of any felony; (ii) conviction of any crime involving moral turpitude or dishonesty that causes, or is likely to cause, material harm to the Company; (iii) participation in a fraud or willful act of dishonesty against the Company that causes, or is likely to cause, material harm to the Company; (iv) intentional and material damage to the Company's property; or (v) material breach of the Company's Proprietary Information and Inventions Agreement.

(b) Change in Control. "***Change in Control***" means the first occurrence of any of the following on or after the Effective Date:

(i) A change in the ownership of the Company which occurs on the date that any one person, or more than one person acting as a group ("***Person***"), acquires ownership of the stock of the Company that, together with the stock held by such Person, constitutes more than 50% of the total voting power of the stock of the Company; provided, however, that for purposes of this subsection (i), the acquisition of additional stock by any one Person, who is considered to own more than 50% of the total voting power of the stock of the Company will not be considered a Change in Control. Further, if the stockholders of the Company immediately before such change in ownership continue to retain immediately after the change in ownership, in substantially the same proportions as their ownership of shares of the Company's voting stock immediately prior to the change in ownership, direct or indirect beneficial ownership of fifty percent (50%) or more of the total voting power of the stock of the Company or of the ultimate parent entity of the Company, such event will not be considered a Change in Control under this subsection (i). For this purpose, indirect beneficial ownership will include, without limitation, an interest resulting from ownership of the voting securities of one or more corporations or other business entities which own the Company, as the case may be, either directly or through one or more subsidiary corporations or other business entities; or

(ii) A change in the effective control of the Company which occurs on the date that a majority of members of the Board (each, a "***Director***") is replaced during any twelve (12) month period by Directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. For purposes of this subsection (ii), if any Person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same Person will not be considered a Change in Control; or

(iii) A change in the ownership of a substantial portion of the Company's assets which occurs on the date that any Person acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such Person) assets from the Company that have a total gross fair market value equal to or more than 50% of the total gross fair market value of all of the assets of the Company immediately prior to such acquisition or acquisitions; provided, however, that for purposes of this subsection (iii), the following will not constitute a change in the ownership of a substantial portion of the Company's assets: (A) a transfer to an entity that is controlled by the Company's stockholders immediately after the transfer, or (B) a transfer of assets by the Company to: (1) a stockholder of the Company (immediately before the asset transfer) in exchange for or with respect to the Company's stock, (2) an entity, 50% or more of the total value or voting power of which is owned, directly or indirectly, by the Company, (3) a Person, that owns, directly or indirectly, 50% or more of the total value or voting power of all the outstanding stock of the Company, or (4) an entity, at least 50% of the total value or voting power of which is owned, directly or indirectly, by a Person described in this subsection (iii)(B)(3). For purposes of this subsection (iii), gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

For purposes of this definition of Change in Control, persons will be considered to be acting as a group if they are owners of a corporation that enters into a merger, consolidation, purchase or acquisition of stock, or similar business transaction with the Company.

Notwithstanding the foregoing, a transaction will not be deemed a Change in Control unless the transaction qualifies as a change in control event within the meaning of Section 409A.

Further and for the avoidance of doubt, a transaction will not constitute a Change in Control if: (i) its sole purpose is to change the jurisdiction of the Company's incorporation, or (ii) its sole purpose is to create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

(c) Change in Control Period. "***Change in Control Period***" means the period beginning upon the date that is three (3) months prior to a Change in Control and continuing through the date that is twelve (12) months following a Change in Control.

(d) Disability. "***Disability***" means Executive is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than twelve (12) months.

(e) Good Reason. "***Good Reason***" means Executive's termination of his or her employment with the Company within thirty (30) days following the expiration of any cure period (discussed below) following the occurrence of one or more of the following, without Executive's express written consent: (i) a material reduction of Executive's duties, authority, or responsibilities, relative to Employee's duties, authority, or responsibilities as in effect immediately prior to such reduction; (ii) a material reduction by the Company in Executive's annualized base pay as in effect immediately prior to such reduction (in other words, a reduction of more than ten percent (10%) of Executive's annualized base compensation in any one year; (iii) the relocation of Executive's principal place of performing his or her duties as an employee of the Company by more than fifty (50) miles; or (iv) the failure of the Company to obtain the assumption of this Agreement by a successor. In order for an event to qualify as Good Reason, Executive must not terminate employment with the Company without first providing the Company with written notice of the acts or omissions constituting the grounds for "Good Reason" within ninety (90) days of the initial existence of the grounds for "Good Reason" and a reasonable cure period of not less than thirty (30) days following the date of such notice. To the extent Executive's primary work location is not the Company's corporate offices due to a shelter-in-place order, quarantine order, or similar work-from-home requirement that applies to Executive, Executive's primary office location, from which a change in location under the foregoing clause (iii) will be measured, will be considered the Company's office location where Executive's employment with the Company primarily was based immediately prior to the commencement of such shelter-in-place order, quarantine order, or similar work-from-home requirement.

(f) Qualifying Termination. "***Qualifying Termination***" means either (i) the Company terminates Executive's employment with the Company for a reason other than (A) Cause, (B) Executive's death, or (C) Executive's Disability or (ii) Executive resigns for Good Reason.

(g) Salary. "***Salary***" means Executive's base salary as in effect immediately prior to the termination of Executive's employment (unless such termination occurs as a result of clause (ii) of the definition of "Good Reason" under Section 6(e), in which case the amount will be equal to

Executive's base salary as in effect immediately prior to such reduction) or, if greater in the case of a Qualifying Termination during the Change in Control Period, as in effect immediately prior to the Change in Control.

7. Successors.

(a) The Company's Successors. Any successor to the Company (whether direct or indirect and whether by purchase, merger, consolidation, liquidation or otherwise) to all or substantially all of the Company's business and/or assets will assume the obligations under this Agreement and agree expressly to perform the obligations under this Agreement in the same manner and to the same extent as the Company would be required to perform such obligations in the absence of a succession. For all purposes under this Agreement, the term "Company" will include any successor to the Company's business and/or assets which executes and delivers the assumption agreement described in this Section 7(a) or which becomes bound by the terms of this Agreement by operation of law.

(b) Executive's Successors. The terms of this Agreement and all rights of Executive hereunder will inure to the benefit of, and be enforceable by, Executive's personal or legal representatives, executors, administrators, successors, heirs, distributees, devisees and legatees. Notwithstanding the foregoing, none of the rights of Executive to receive any form of compensation payable pursuant to this Agreement may be assigned or transferred except by will or the laws of descent and distribution. Any other attempted assignment, transfer, conveyance, or other disposition of Executive's right to compensation or other benefits will be null and void.

8. Notice.

(a) General. Notices and all other communications contemplated by this Agreement will be in writing and will be deemed to have been duly given (a) upon actual delivery to the party to be notified, (b) twenty-four (24) hours after confirmed facsimile transmission, (c) one (1) business day after deposit with a recognized overnight courier, or (d) three (3) business days after deposit with the U.S. Postal Service by first class certified or registered mail, return receipt requested, postage prepaid, addressed: (i) if to Executive, at the address Executive will have most recently furnished to the Company in writing, or (ii) if to the Company, to its corporate headquarters and all notices will be directed to the General Counsel of the Company.

(b) Notice of Termination. Any termination of Executive's employment by the Company for Cause or by Executive for Good Reason or as a result of a voluntary resignation will be communicated by a notice of termination to the other party hereto given in accordance with Section 8(a) of this Agreement. Such notice will indicate the specific termination provision in this Agreement relied upon, will set forth in reasonable detail the facts and circumstances claimed to provide a basis for termination under the provision so indicated, and will specify the termination date (which will be not more than thirty (30) days after the giving of such notice or in the case of Executive's resignation for Good Reason, in accordance with the requirements under Section 6(e)). The failure by Executive to include in the notice any fact or circumstance which contributes to a showing of Good Reason will not waive any right of Executive hereunder or preclude Executive from asserting such fact or circumstance in enforcing Executive's rights hereunder.

(c) Resignation. The termination of Executive's employment for any reason also will constitute, without any further required action by Executive, Executive's voluntary resignation from all officer and/or director positions held at the Company or any of its subsidiaries or affiliates, and at the Board's request, Executive will execute any documents reasonably necessary to reflect the resignations.

9. Miscellaneous Provisions.

(a) No Duty to Mitigate. Executive will not be required to mitigate the amount of any payment contemplated by this Agreement, nor will any such payment be reduced by any earnings that Executive may receive from any other source except as specified in Sections 3(e), 4(d) and 5.

(b) Waiver. No provision of this Agreement will be modified, waived or discharged unless the modification, waiver or discharge is agreed to in writing and signed by Executive and by an authorized officer of the Company (other than Executive). No waiver by either party of any breach of, or of compliance with, any condition or provision of this Agreement by the other party will be considered a waiver of any other condition or provision or of the same condition or provision at another time.

(c) Headings. All captions and section headings used in this Agreement are for convenient reference only and do not form a part of this Agreement.

(d) Entire Agreement. This Agreement constitutes the entire agreement of the parties hereto and supersedes in their entirety all prior representations, understandings, undertakings or agreements (whether oral or written and whether expressed or implied) of the parties, including the Prior Agreement. No waiver, alteration, or modification of any of the provisions of this Agreement will be binding unless in writing and signed by duly authorized representatives of the parties hereto and which specifically mention this Agreement.

(e) Choice of Law. The validity, interpretation, construction, and performance of this Agreement will be governed by the laws of the State of California (with the exception of its conflict of laws provisions). Any claims or legal actions by one party against the other arising out of the relationship between the parties contemplated herein (whether or not arising under this Agreement) will be commenced or maintained in any state or federal court located in San Mateo County, California, and Executive and the Company hereby submit to the jurisdiction and venue of any such court.

(f) Severability. The invalidity, illegality, or unenforceability of any provision or provisions of this Agreement will not affect the validity, legality or enforceability of any other provision hereof, which will remain in full force and effect, and this Agreement will be construed and enforced as if the invalid, illegal, or unenforceable provision had not been included.

(g) Withholding. The Company (and any parent, subsidiary or other affiliate of the Company, as applicable) will have the right and authority to deduct from any payments or benefits all applicable federal, state, local, and/or non-U.S. taxes or other required withholdings and payroll deductions ("***Withholdings***"). Prior to the payment of any amounts or provision of any benefits under this Agreement, the Company (and any parent, subsidiary or other affiliate of the Company, as

applicable) is permitted to deduct or withhold, or require Executive to remit to the Company, an amount sufficient to satisfy any applicable Withholdings with respect to such payments and benefits. Neither the Company nor any parent, subsidiary or other affiliate of the Company will have any responsibility, liability or obligation to pay Executive's taxes arising from or relating to any payments or benefits under this Agreement.

(h) Counterparts. This Agreement may be executed in counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

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IN WITNESS WHEREOF, each of the parties has executed this Agreement, in the case of the Company by its duly authorized officer, as of the day and year set forth below.

COMPANY PACIFIC BIOSCIENCES OF CALIFORNIA, INC.

By: /s/ William Ericson

Name: William Ericson

Title: Compensation Committee Chair
of the Board of Directors

EXECUTIVE CHRISTIAN O. HENRY

/s/ Christian O. Henry

Title: President and Chief Executive Officer

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.

AMENDED AND RESTATED CHANGE IN CONTROL AND SEVERANCE AGREEMENT

This Amended and Restated Change in Control and Severance Agreement (the "*Agreement*") is made and entered into by and between Mark Van Oene ("*Executive*") and Pacific Biosciences of California, Inc., a Delaware corporation (the "*Company*"), effective as of December 12, 2024 (the "*Effective Date*"), and supersedes and replaces the Prior Agreement.

RECITALS

1. It is expected that the Company from time to time will consider the possibility of an acquisition by another company or other change in control. The Board of Directors of the Company (the "*Board*") recognizes that such considerations can be a distraction to Executive and can cause Executive to consider alternative employment opportunities. The Board has determined that it is in the best interests of the Company and its stockholders to assure that the Company will have the continued dedication and objectivity of Executive, notwithstanding the possibility, threat or occurrence of such a termination of employment or the occurrence of a Change in Control (as defined herein) of the Company.

2. The Board believes that it is in the best interests of the Company and its stockholders to provide Executive with an incentive to continue Executive's employment and to motivate Executive to maximize the value of the Company for the benefit of its stockholders.

3. The Board believes that it is imperative to provide Executive with certain severance benefits upon Executive's termination of employment in connection with a Change in Control. These benefits will provide Executive with enhanced financial security, incentive and encouragement to remain with the Company.

4. Certain capitalized terms used in the Agreement are defined in Section 6 below.

AGREEMENT

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

1. Term of Agreement. This Agreement will have an initial term of three (3) years commencing on the Effective Date (the "*Initial Term*"). On the third anniversary of the Effective Date, this Agreement will renew automatically for additional one (1) year terms (each an "*Additional Term*"), unless either party provides the other party with written notice of non-renewal at least sixty (60) days prior to the date of automatic renewal. Notwithstanding the foregoing provisions of this paragraph, if a Change in Control occurs when there are fewer than twelve (12) months remaining during the Initial Term or an Additional Term, the term of this Agreement will extend automatically through the date that is twelve (12) months following the effective date of the Change in Control. If Executive becomes entitled to benefits under Section 3(a) or Section 3(b) during the term of this

Agreement, the Agreement will not terminate until all of the obligations of the parties hereto with respect to this Agreement have been satisfied.

2. At-Will Employment. The Company and Executive acknowledge that Executive's employment is and will continue to be at-will, as defined under applicable law. No payments, benefits, or provisions under this Agreement will confer upon Executive any right to continue Executive's employment with the Company, nor will they interfere with or limit in any way the right of the Company or Executive to terminate such relationship at any time, with or without cause, to the extent permitted by applicable laws.

3. Severance Benefits.

(a) Termination without Cause or Other than Death or Disability or Resignation for Good Reason Other than During the Change in Control Period. If a Qualifying Termination occurs other than during the Change in Control Period, then subject to Section 4, Executive will receive the following severance from the Company:

(i) Base Salary Severance. Executive will receive a lump sum cash payment equal to twelve (12) months of Executive's salary, less any applicable withholdings.

(ii) Continued Employee Benefits. If Executive elects continuation coverage pursuant to the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("*COBRA*") for Executive and Executive's eligible dependents (as applicable), within the time period prescribed pursuant to COBRA, Executive will receive Company-paid group health, dental and vision coverage for Executive and Executive's eligible dependents, as applicable, at the coverage levels in effect immediately prior to the termination of Executive's employment (the "*COBRA Severance*") until the earliest of: (A) a period of twelve (12) months from the last date of employment of the Executive with the Company, (B) the date upon which Executive and/or Executive's eligible dependents becomes covered under similar plans, or (C) the expiration of Executive's and Executive's eligible dependents' (as applicable) eligibility for continuation coverage under COBRA.

(b) Termination without Cause or Other than Death or Disability or Resignation for Good Reason During the Change in Control Period. If a Qualifying Termination occurs during the Change in Control Period, then subject to Section 4, Executive will receive the following severance from the Company:

(i) Base Salary Severance. Executive will receive a lump sum cash payment equal to twelve (12) months of Executive's salary, less any applicable withholdings.

(ii) Prorated Target Bonus Severance. Executive will receive a lump sum cash payment equal to Executive's annualized target bonus in effect for the year in which the Qualifying Termination occurs, provided that such amount will be prorated based on a fraction, the numerator of which is the number of days during which Executive was employed with the Company (or its successor) in the year that the Qualifying Termination occurs, and the denominator of which is the total number of days in such year (the "*Prorated Bonus Severance*").

(iii)Continued Employee Benefits. If Executive elects continuation coverage pursuant to COBRA for Executive and Executive's eligible dependents (as applicable), within the time period prescribed pursuant to COBRA, the Company will provide the COBRA

Severance until the earliest of: (A) a period of twelve (12) months from the last date of employment of the Executive with the Company, (B) the date upon which Executive and/or Executive's eligible dependents becomes covered under similar plans, or (C) the expiration of Executive's and Executive's eligible dependents' (as applicable) eligibility for continuation coverage under COBRA.

(iv) Equity. One hundred percent (100%) of the unvested portion of the Executive's then-outstanding equity awards (the "*Awards*") will immediately vest and, to the extent applicable, become exercisable, as of the date of such termination. To the extent that an Award is subject to performance-based vesting at the time of such termination, such performance goals will be deemed achieved at one hundred percent (100%) of target levels and all other terms and conditions met, unless specifically provided otherwise under the applicable Award agreement. The Awards will remain exercisable, to the extent applicable, following Executive's termination for the period prescribed in the applicable equity plan and agreement for each Award.

(c) Other Termination. If Executive's employment with the Company terminates other than as set forth in Section 3(a) or 3(b) above, then (i) all vesting will terminate immediately with respect to Executive's outstanding Awards, (ii) all payments of compensation by the Company to Executive hereunder will terminate immediately (except as to amounts already earned), and (iii) Executive will only be eligible for severance benefits in accordance with the Company's established policies, if any, as then in effect.

(d) Accrued Amounts. On any termination of Executive's employment with the Company, Executive will be entitled to receive all accrued but unpaid vacation, expense reimbursements, wages, and other benefits due to Executive under any Company-provided plans, policies, and arrangements.

(e) Non-duplication of Payment or Benefits. Notwithstanding any provision of this Agreement to the contrary, if Executive is entitled to any cash severance, continued health coverage severance benefits, vesting acceleration of any Awards, or other severance or separation benefits similar to those provided under this Agreement, by operation of applicable law or under a plan, policy, contract, or arrangement sponsored by or to which the Company is a party other than this Agreement ("Other Benefits"), then the corresponding severance payments and benefits under this Agreement will be reduced by the amount of Other Benefits paid or provided to Executive. For the avoidance of doubt, in the event of a Qualifying Termination under which Executive becomes entitled to severance under Section 3(b), any severance payments and benefits to be provided to the Executive under Section 3(b) will be reduced by the corresponding severance payments or benefits, as applicable, that already were provided to the Executive under Section 3(a).

4. Conditions to Receipt of Severance.

(a) Release of Claims Agreement. The receipt of any severance payments or benefits pursuant to this Agreement is subject to Executive signing and not revoking a separation agreement and release of claims in a form acceptable to the Company (the "*Release*"), which must become effective and irrevocable no later than the sixtieth (60^{th}) day following Executive's termination of employment (the "*Release Deadline Date*"). If the Release does not become effective and irrevocable by the Release Deadline Date, Executive will forfeit any right to severance payments or benefits under this Agreement. No severance payments and benefits under Section 3(a) or 3(b) of this Agreement will be paid or provided until the Release becomes effective and irrevocable, and any such severance payments and benefits otherwise payable between the date of Executive's termination of

employment and the date the Release becomes effective and irrevocable (including, if applicable, the lump sum cash payment under Section 4(c) below) will be paid, subject to the requirements of Section 4(d) below, on the Company's first regularly scheduled payroll date on or following the date the Release becomes effective and irrevocable. Any restricted stock units, performance units, performance shares, and/or similar full value awards that accelerate vesting under this Agreement ("Full Value Awards") will be settled (subject to Section 4(d) below and the terms of any award agreement or other Company plan, policy, or arrangement governing the settlement timing of such award to the extent such terms specifically require different payment timing in order to comply with the requirements of Section 409A, as applicable (the "Full Value Settlement Provisions"), on a date within ten (10) days following the date the Release becomes effective and irrevocable.

(b) Confidential Information and Invention Assignment Agreements. Executive's receipt of any payments or benefits under Sections 3(a) and 3(b) will be subject to Executive continuing to comply with the terms of any confidential information and invention assignment agreement executed by Executive in favor of the Company and the provisions of this Agreement.

(c) COBRA Severance Limitations. Notwithstanding the provisions of Sections 3(a)(ii) and 3(b)(ii), if the Company determines in its sole discretion that it cannot provide the COBRA Severance without potentially violating applicable laws (including, without limitation, Section 2716 of the Public Health Service Act and the Employee Retirement Income Security Act of 1974, as amended), then in lieu of such COBRA Severance, and subject to any delay required by this Section 4, the Company will provide to Executive a taxable lump sum cash payment in an amount equal to the product of (x) the number of months of Salary severance specified in Section 3(a)(i) or 3(b)(i), as applicable, multiplied by (y) the monthly COBRA premium that Executive otherwise would be required to pay to continue the group health, dental and vision coverage for Executive and Executive's eligible dependents, as applicable, as in effect on the date of termination of Executive's employment (which amount will be based on the premium for the first month of COBRA coverage for Executive and Executive's eligible dependents), which payment will be made regardless of whether Executive elects COBRA continuation coverage (the "*Taxable Payment*"). For the avoidance of doubt, the Taxable Payment may be used for any purpose, including, but not limited to continuation coverage under COBRA, and will be subject to all applicable tax withholdings. Notwithstanding anything to the contrary under this Agreement, if the Company determines in its sole discretion at any time that it cannot provide the COBRA Severance or the Taxable Payment without violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act and the Employee Retirement Income Security Act of 1974, as amended), Executive will not receive any COBRA Severance or Taxable Amount under this Agreement.

(d) Section 409A.

(i) Notwithstanding anything to the contrary in this Agreement, no severance payments or benefits payable to Executive, if any, pursuant to this Agreement that, when considered together with any other severance payments or separation benefits, is considered deferred compensation under Internal Revenue Code Section 409A (together, the "*Deferred Payments*") will be payable until Executive has a "separation from service" within the meaning of Section 409A of the Internal Revenue Code of 1986, as amended (the "*Code*"), and the Treasury Regulations and guidance thereunder, and any applicable state law equivalent, as each may be promulgated, amended or modified from time to time ("*Section 409A*"). Similarly, no severance payable to Executive, if any, pursuant to this Agreement that otherwise would be exempt from Section 409A pursuant to Treasury Regulations Section 1.409A-1(b)(9) will be payable until Executive has a "separation from service"

within the meaning of Section 409A. To the extent required to be exempt from or comply with Section 409A, references to the termination of Executive's employment or similar phrases used in this Agreement will mean Executive's "separation from service" within the meaning of Section 409A.

(ii) Any severance payments or benefits under this Agreement that would be considered Deferred Payments will be paid on, or, in the case of installments, will not commence until, the sixtieth (60^{th}) day following Executive's separation from service, or, if later, such time as required by Section 4(d)(iii) (or with respect to Full Value Awards, such time or times as required by any applicable Full Value Settlement Provisions). Except as required by Section 4(d)(iii) and any applicable Full Value Settlement Provisions, any Deferred Payments payable in installments that would have been made to Executive during the sixty (60) day period immediately following Executive's separation from service but for the preceding sentence will be paid to Executive on the sixtieth (60^{th}) day following Executive's separation from service and the remaining payments shall be made as provided in this Agreement.

(iii) Further, if Executive is a "specified employee" within the meaning of Section 409A at the time of Executive's separation from service (other than due to death), any Deferred Payments that otherwise are payable within the first six (6) months following Executive's separation from service will become payable on the first payroll date that occurs on or after the date six (6) months and one (1) day following the date of Executive's separation from service. All subsequent Deferred Payments, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, in the event of Executive's death following Executive's separation from service but prior to the six (6) month anniversary of Executive's separation from service (or any later delay date), then any payments delayed in accordance with this paragraph will be payable in a lump sum as soon as administratively practicable after the date of Executive's death and all other Deferred Payments will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under the Agreement is intended to constitute a separate payment for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.

(iv) Any amount paid under this Agreement that satisfies the requirements of the "short-term deferral" rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Deferred Payments for purposes of clause (i) above. Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that is within the limit set forth thereunder will not constitute Deferred Payments for purposes of clause (i) above.

(v) The foregoing provisions are intended to comply with, or be exempt from, the requirements of Section 409A so that none of the severance payments and benefits to be provided under the Agreement will be subject to the additional tax imposed under Section 409A, and any ambiguities and ambiguous terms herein will be interpreted to so comply or be exempt. Executive and the Company agree to work together in good faith to consider amendments to the Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any additional tax or income recognition prior to actual payment to Executive under Section 409A. In no event will the Company or any of its subsidiaries or other affiliates have any obligation, responsibility or liability to reimburse, indemnify or hold harmless Executive for any taxes imposed, or other costs incurred, as result of Section 409A.

5. Limitation on Payments. In the event that the severance and other benefits provided for in this Agreement or otherwise that Executive would receive from the Company or any other party whether in connection with the provisions of this Agreement or otherwise (the "*Payments*") would (i) constitute "parachute payments" within the meaning of Section 280G of the Code and (ii) but for this Section 5, would be subject to the excise tax imposed by Section 4999 of the Code, then the Payments will be either:

(a) delivered in full, or

(b) delivered as to such lesser extent which would result in no portion of such Payments being subject to excise tax under Section 4999 of the Code,

whichever of the foregoing amounts, taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, results in the receipt by Executive on an after-tax basis, of the greatest amount of Payments, notwithstanding that all or some portion of such Payments may be taxable under Section 4999 of the Code. If a reduction in severance and other benefits constituting "parachute payments" is necessary so that benefits are delivered to a lesser extent, reduction will occur in the following order: (i) reduction of cash payments in reverse chronological order (that is, the cash payment owed on the latest date following the occurrence of the event triggering the excise tax under Code Section 4999 will be the first cash payment to be reduced); (ii) cancellation of equity awards granted "contingent on a change in ownership or control" (within the meaning of Code Section 280G) in the reverse order of date of grant of the equity awards (that is, the most recently granted equity awards will be cancelled first), (iii) reduction of accelerated vesting of equity awards in the reverse order of date of grant of the equity awards (that is, the vesting of the most recently granted equity awards will be cancelled first); (iv) reduction of employee benefits in reverse chronological order (that is, the benefit owed on the latest date following the occurrence of the event triggering such excise tax will be the first benefit to be reduced). In no event will Executive have any discretion with respect to the ordering of Payment reductions. Executive will be solely responsible for the payment of all personal tax liability that is incurred as a result of the payments and benefits received under this Agreement, and neither the Company nor any parent, subsidiary or other affiliate of the Company will have any responsibility, liability or obligation to reimburse, indemnify or hold harmless Executive for any of those payments of personal tax liability.

Unless the Company and Executive otherwise agree in writing, any determination required under this Section 5 will be made in writing by a nationally recognized accounting or valuation firm (the "*Firm*") selected by the Company, whose determination will be conclusive and binding upon Executive and the Company for all purposes. For purposes of making the calculations required by this Section 5, the Firm may make reasonable assumptions and approximations concerning applicable taxes and may rely on reasonable, good faith interpretations concerning the application of Sections 280G and 4999 of the Code. The Company and Executive will furnish to the Firm such information and documents as the Firm may reasonably request in order to make a determination under this Section. The Company will bear all costs and make all payments required to be made to the Firm for the Firm's services that are rendered in connection with any calculations contemplated by this Section 5. The Company will have no liability to Executive for the determinations of the Firm.

6. Definition of Terms. For purposes of this Agreement, the following terms referred to in this Agreement will have the following meanings:

(a) Cause. "*Cause*" means (i) conviction of any felony; (ii) conviction of any crime involving moral turpitude or dishonesty that causes, or is likely to cause, material harm to the Company; (iii) participation in a fraud or willful act of dishonesty against the Company that causes, or is likely to cause, material harm to the Company; (iv) intentional and material damage to the Company's property; or (v) material breach of the Company's Proprietary Information and Inventions Agreement.

(b) Change in Control. "*Change in Control*" means the first occurrence of any of the following on or after the Effective Date:

(i) A change in the ownership of the Company which occurs on the date that any one person, or more than one person acting as a group ("*Person*"), acquires ownership of the stock of the Company that, together with the stock held by such Person, constitutes more than 50% of the total voting power of the stock of the Company; provided, however, that for purposes of this subsection (i), the acquisition of additional stock by any one Person, who is considered to own more than 50% of the total voting power of the stock of the Company will not be considered a Change in Control. Further, if the stockholders of the Company immediately before such change in ownership continue to retain immediately after the change in ownership, in substantially the same proportions as their ownership of shares of the Company's voting stock immediately prior to the change in ownership, direct or indirect beneficial ownership of fifty percent (50%) or more of the total voting power of the stock of the Company or of the ultimate parent entity of the Company, such event will not be considered a Change in Control under this subsection (i). For this purpose, indirect beneficial ownership will include, without limitation, an interest resulting from ownership of the voting securities of one or more corporations or other business entities which own the Company, as the case may be, either directly or through one or more subsidiary corporations or other business entities; or

(ii) A change in the effective control of the Company which occurs on the date that a majority of members of the Board (each, a "*Director*") is replaced during any twelve (12) month period by Directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. For purposes of this subsection (ii), if any Person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same Person will not be considered a Change in Control; or

(iii) A change in the ownership of a substantial portion of the Company's assets which occurs on the date that any Person acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such Person) assets from the Company that have a total gross fair market value equal to or more than 50% of the total gross fair market value of all of the assets of the Company immediately prior to such acquisition or acquisitions; provided, however, that for purposes of this subsection (iii), the following will not constitute a change in the ownership of a substantial portion of the Company's assets: (A) a transfer to an entity that is controlled by the Company's stockholders immediately after the transfer, or (B) a transfer of assets by the Company to: (1) a stockholder of the Company (immediately before the asset transfer) in exchange for or with respect to the Company's stock, (2) an entity, 50% or more of the total value or voting power of which is owned, directly or indirectly, by the Company, (3) a Person, that owns, directly or indirectly, 50% or more of the total value or voting power of all the outstanding stock of the Company, or (4) an entity, at least 50% of the total value or voting power of which is owned, directly or indirectly,

by a Person described in this subsection (iii)(B)(3). For purposes of this subsection (iii), gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

For purposes of this definition of Change in Control, persons will be considered to be acting as a group if they are owners of a corporation that enters into a merger, consolidation, purchase or acquisition of stock, or similar business transaction with the Company.

Notwithstanding the foregoing, a transaction will not be deemed a Change in Control unless the transaction qualifies as a change in control event within the meaning of Section 409A.

Further and for the avoidance of doubt, a transaction will not constitute a Change in Control if: (i) its sole purpose is to change the jurisdiction of the Company's incorporation, or (ii) its sole purpose is to create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

(c) Change in Control Period. "*Change in Control Period*" means the period beginning upon the date that is three (3) months prior to a Change in Control and continuing through the date that is twelve (12) months following a Change in Control.

(d) Disability. "*Disability*" means Executive is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than twelve (12) months.

(e) Good Reason. "*Good Reason*" means Executive's termination of his or her employment with the Company within thirty (30) days following the expiration of any cure period (discussed below) following the occurrence of one or more of the following, without Executive's express written consent: (i) a material reduction of Executive's duties, authority, or responsibilities, relative to Employee's duties, authority, or responsibilities as in effect immediately prior to such reduction; *provided, however,* that a reduction in duties, authority, or responsibilities solely by virtue of the Company being acquired and made part of a larger entity (for example, where Executive retains essentially the same responsibility and duties of the subsidiary, business unit or division substantially containing the Company's business following a Change in Control) shall not constitute "Good Reason"; (ii) a material reduction by the Company in Executive's annualized base pay as in effect immediately prior to such reduction (in other words, a reduction of more than ten percent (10%) of Executive's annualized base compensation in any one year, other than a reduction applicable to executives generally that does not adversely affect Executive to a greater extent than other similarly situated executives); (iii) the relocation of Executive's principal place of performing his or her duties as an employee of the Company by more than fifty (50) miles; or (iv) the failure of the Company to obtain the assumption of this Agreement by a successor. In order for an event to qualify as Good Reason, Executive must not terminate employment with the Company without first providing the Company with written notice of the acts or omissions constituting the grounds for "Good Reason" within ninety (90) days of the initial existence of the grounds for "Good Reason" and a reasonable cure period of not less than thirty (30) days following the date of such notice. To the extent Executive's primary work location is not the Company's corporate offices due to a shelter-in-place order, quarantine order, or similar work-from-home requirement that applies to Executive, Executive's primary office location, from which a change in location under the foregoing clause (iii) will be

measured, will be considered the Company's office location where Executive's employment with the Company primarily was based immediately prior to the commencement of such shelter-in-place order, quarantine order, or similar work-from-home requirement.

(f) Prior Agreement. "*Prior Agreement*" means the Change in Control and Severance Agreement previously made and entered into by and between Executive and the Company, effective as of January 8, 2021.

(g) Qualifying Termination. "*Qualifying Termination*" means either (i) the Company terminates Executive's employment with the Company for a reason other than (A) Cause, (B) Executive's death, or (C) Executive's Disability or (ii) Executive resigns for Good Reason.

(h) Salary. "*Salary*" means Executive's base salary as in effect immediately prior to the termination of Executive's employment (unless such termination occurs as a result of clause (ii) of the definition of "Good Reason" under Section 6(e), in which case the amount will be equal to Executive's base salary as in effect immediately prior to such reduction) or, if greater in the case of a Qualifying Termination during the Change in Control Period, as in effect immediately prior to the Change in Control.

7. Successors.

(a) The Company's Successors. Any successor to the Company (whether direct or indirect and whether by purchase, merger, consolidation, liquidation or otherwise) to all or substantially all of the Company's business and/or assets will assume the obligations under this Agreement and agree expressly to perform the obligations under this Agreement in the same manner and to the same extent as the Company would be required to perform such obligations in the absence of a succession. For all purposes under this Agreement, the term "Company" will include any successor to the Company's business and/or assets which executes and delivers the assumption agreement described in this Section 7(a) or which becomes bound by the terms of this Agreement by operation of law.

(b) Executive's Successors. The terms of this Agreement and all rights of Executive hereunder will inure to the benefit of, and be enforceable by, Executive's personal or legal representatives, executors, administrators, successors, heirs, distributees, devisees and legatees. Notwithstanding the foregoing, none of the rights of Executive to receive any form of compensation payable pursuant to this Agreement may be assigned or transferred except by will or the laws of descent and distribution. Any other attempted assignment, transfer, conveyance, or other disposition of Executive's right to compensation or other benefits will be null and void.

8. Notice.

(a) General. Notices and all other communications contemplated by this Agreement will be in writing and will be deemed to have been duly given (a) upon actual delivery to the party to be notified, (b) twenty-four (24) hours after confirmed facsimile transmission, (c) one (1) business day after deposit with a recognized overnight courier, or (d) three (3) business days after deposit with the U.S. Postal Service by first class certified or registered mail, return receipt requested, postage prepaid, addressed: (i) if to Executive, at the address Executive will have most recently furnished to the Company in writing, or (ii) if to the Company, to its corporate headquarters and all notices will be directed to the General Counsel of the Company.

(b) Notice of Termination. Any termination of Executive's employment by the Company for Cause or by Executive for Good Reason or as a result of a voluntary resignation will be communicated by a notice of termination to the other party hereto given in accordance with Section 8(a) of this Agreement. Such notice will indicate the specific termination provision in this Agreement relied upon, will set forth in reasonable detail the facts and circumstances claimed to provide a basis for termination under the provision so indicated, and will specify the termination date (which will be not more than thirty (30) days after the giving of such notice or in the case of Executive's resignation for Good Reason, in accordance with the requirements under Section 6(e)). The failure by Executive to include in the notice any fact or circumstance which contributes to a showing of Good Reason will not waive any right of Executive hereunder or preclude Executive from asserting such fact or circumstance in enforcing Executive's rights hereunder.

(c) Resignation. The termination of Executive's employment for any reason also will constitute, without any further required action by Executive, Executive's voluntary resignation from all officer and/or director positions held at the Company or any of its subsidiaries or affiliates, and at the Board's request, Executive will execute any documents reasonably necessary to reflect the resignations.

9. Miscellaneous Provisions.

(a) No Duty to Mitigate. Executive will not be required to mitigate the amount of any payment contemplated by this Agreement, nor will any such payment be reduced by any earnings that Executive may receive from any other source except as specified in Sections 3(e), 4(d) and 5.

(b) Waiver. No provision of this Agreement will be modified, waived or discharged unless the modification, waiver or discharge is agreed to in writing and signed by Executive and by an authorized officer of the Company (other than Executive). No waiver by either party of any breach of, or of compliance with, any condition or provision of this Agreement by the other party will be considered a waiver of any other condition or provision or of the same condition or provision at another time.

(c) Headings. All captions and section headings used in this Agreement are for convenient reference only and do not form a part of this Agreement.

(d) Entire Agreement. This Agreement constitutes the entire agreement of the parties hereto and supersedes in their entirety all prior representations, understandings, undertakings or agreements (whether oral or written and whether expressed or implied) of the parties, including the Prior Agreement. No waiver, alteration, or modification of any of the provisions of this Agreement will be binding unless in writing and signed by duly authorized representatives of the parties hereto and which specifically mention this Agreement.

(e) Choice of Law. The validity, interpretation, construction, and performance of this Agreement will be governed by the laws of the State of California (with the exception of its conflict of laws provisions). Any claims or legal actions by one party against the other arising out of the relationship between the parties contemplated herein (whether or not arising under this Agreement) will be commenced or maintained in any state or federal court located in San Mateo County, California, and Executive and the Company hereby submit to the jurisdiction and venue of any such court.

(f) Severability. The invalidity, illegality, or unenforceability of any provision or provisions of this Agreement will not affect the validity, legality or enforceability of any other provision hereof, which will remain in full force and effect, and this Agreement will be construed and enforced as if the invalid, illegal, or unenforceable provision had not been included.

(g) Withholding. The Company (and any parent, subsidiary or other affiliate of the Company, as applicable) will have the right and authority to deduct from any payments or benefits all applicable federal, state, local, and/or non-U.S. taxes or other required withholdings and payroll deductions ("*Withholdings*"). Prior to the payment of any amounts or provision of any benefits under this Agreement, the Company (and any parent, subsidiary or other affiliate of the Company, as applicable) is permitted to deduct or withhold, or require Executive to remit to the Company, an amount sufficient to satisfy any applicable Withholdings with respect to such payments and benefits. Neither the Company nor any parent, subsidiary or other affiliate of the Company will have any responsibility, liability or obligation to pay Executive's taxes arising from or relating to any payments or benefits under this Agreement.

(h) Counterparts. This Agreement may be executed in counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

o O o

IN WITNESS WHEREOF, each of the parties has executed this Agreement, in the case of the Company by its duly authorized officer, as of the Effective Date set forth above.

COMPANY PACIFIC BIOSCIENCES OF CALIFORNIA, INC.

By: /s/ Natalie Welch

Name: Natalie Welch

Title: Chief People Officer

EXECUTIVE By: /s/ Mark Van Oene

Name: Mark van Oene

Exhibit 10.18

CERTAIN INFORMATION IN THIS EXHIBIT IDENTIFIED BY [***] IS CONFIDENTIAL AND HAS BEEN EXCLUDED BECAUSE (I) IT IS NOT MATERIAL AND (II) THE REGISTRANT CUSTOMARILY AND ACTUALLY TREATS THAT INFORMATION AS PRIVATE OR CONFIDENTIAL.

LEASE

BY AND BETWEEN

MENLO PARK PORTFOLIO II, LLC, LESSOR

AND

PACIFIC BIOSCIENCES OF CALIFORNIA, INC., a Delaware corporation,

LESSEE

Menlo Business Park

1315 O'Brien Drive [To be re-addressed to 1305 O'Brien Drive]

Menlo Park, California 94025

July 22, 2015

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L E A S E

Menlo Business Park
Building #3
1315 O'Brien Drive [*to become 1305 O'Brien Drive*]
Menlo Park, California 94025

THIS LEASE, referred to herein as this "**Lease**," is made and entered into as of July 22, 2015, (the "**Effective Date**") by and between MENLO PARK PORTFOLIO II, LLC, a Delaware limited liability company "**Lessor**," and PACIFIC BIOSCIENCES OF CALIFORNIA, INC., a Delaware corporation, hereafter referred to as "**Lessee**".

RECITALS:

A.Lessor is the owner of the real property located in Menlo Business Park, Menlo Park, California, commonly referred to as 1315 O'Brien Drive [*to be re-addressed 1305 O'Brien Drive*], more particularly described on Exhibit "A" attached hereto and incorporated by reference herein, together with all easements and appurtenances thereto (collectively, the "**Land**") and the existing buildings thereon, referred to as Building #3, containing approximately 217,770 rentable square feet and all other improvements located thereon (collectively, the "**Improvements**"). The Land and Improvements are referred to herein collectively as the "**Property**." The Property is shown as a part of the Menlo Business Park Master Plan and is attached hereto as Exhibit "B" and incorporated by reference herein, and identifies the properties that comprise the Menlo Business Park. Building #3 is referred to herein as the "**Building**." The floor plan of the Building is attached hereto as Exhibit "C" and incorporated by reference herein.

B.Lessor and Lessee wish to enter into this Lease of the Premises defined in Paragraph 1 upon the terms and conditions set forth herein.

NOW, THEREFORE, the parties agree as follows:

1.Lease. Lessor hereby leases to Lessee, and Lessee leases from Lessor, at the rental rate and upon the terms and conditions set forth herein, the Premises (as hereinafter defined). Beginning on the Commencement Date (as defined in Paragraph 2(a)), Lessor hereby leases to Lessee, and Lessee leases from Lessor, the portion of the Building consisting of approximately One Hundred Eighty Thousand (180,000) rentable square feet, as shown on the floor plan of the Building attached hereto as Exhibit "C" (the "**Premises**"). The Building is currently estimated to be approximately Two Hundred Seventeen Thousand Seven Hundred Seventy (217,770) rentable square feet. Lessor and Lessee acknowledge that the Building will be re-measured in accordance with the Dripline BOMA standard following the Effective Date. Following such re-measurement of the Building, Lessee's Pro Rata Share of the Building and the Park Expenses (as both shares are described in Paragraph 6(a) below) shall be adjusted based on such re-measurement of the Building. The parties hereby acknowledge and agree that the re-measurement of the Building shall not impact the rentable square footage of the Premises as set forth herein. Throughout the term of this Lease, Lessee shall also have the non-exclusive right to use Lessee's share of the on-site parking spaces pursuant to Paragraph 29, and the non-exclusive

right to use the common areas of the Building and the other Improvements on the Property intended for use in common by the tenants of the Property.

2. Term.

(a) The term of this Lease (the "**Term**") shall commence on the date that is the later of April 15, 2016, or the date by which all of the following conditions have occurred (the "**Commencement Date**"): (1) Lessor shall have delivered possession of the Premises to Lessee in broom clean condition, (2) the Work has been Substantially Completed (as defined in the Work Letter attached as Exhibit "F" hereto) including the Tenant Improvements summarized on Schedule "F-3" and Schedule "F-4" to Exhibit "F" attached hereto, and (3) Lessor shall have caused the issuance of a Temporary Certificate of Occupancy (a "**TCO**") or such other documentation from the City of Menlo Park (the "**City**") specifying that the Premises can be legally occupied. The Commencement Date shall be confirmed in writing by Lessor and Lessee by the execution and delivery of the Commencement Memorandum in the form attached hereto as Exhibit "D".

(b) The Term of this Lease shall expire, unless sooner terminated in accordance with the provisions hereof or as permitted by law, on the last day of the one hundred thirty-second (132nd) full calendar month after the Commencement Date.

(c) Except as specifically provided otherwise in this Paragraph 2(c), if possession of the Premises is not delivered in the condition required by Paragraph 2(a), Lessor shall not be subject to any liability therefor, nor shall such failure affect the validity of this Lease, or the obligations of Lessee hereunder, but in such case, Lessee shall not, except as otherwise provided herein, be obligated to pay rent or perform any other obligation of Lessee under the terms of this Lease until possession of the Premises is delivered to Lessee in the condition referred to in Paragraph 2(a) above.

(i) If the Commencement Date has not occurred by October 15, 2016, which date shall be extended one (1) day for each day of Tenant Delay (as defined in Section 2(c)(iii) of Exhibit "F") (such date, as extended, the "**Abatement Trigger Date**"), then Lessee shall be entitled to receive a credit toward Base Rent in an amount equal to one (1) day of Base Rent next coming due under the Lease for each day beyond the Abatement Trigger Date until the Commencement Date occurs up to a total credit amount equal to ninety (90) days of Base Rent.

(ii) If the Architectural CUP and the Use CUP (as defined below, and, collectively, the "**Use CUPs**") are not obtained with the fifteen (15) day appeal period having lapsed without appeal by September 30, 2015 (or, if appealed, the City has not confirmed the Use CUPs in all material respects by September 30, 2015), Lessee may notify Lessor in writing of its election to terminate this Lease prior to the receipt of the Use CUPs, in which event the parties shall be discharged from all further obligations hereunder except to the extent any obligations expressly survive the expiration or termination of this Lease.

(iii) If the Use CUPs are not obtained by September 15, 2015, then, on September 16, 2015, Lessor shall give Lessee written notice of such failure, and, if Lessor

reasonably believes that either (a) the Use CUPs will never be issued by the City or will not be issued within a reasonable time that will allow Lessor to complete the Work by December 31, 2016 or (b) the Use CUPs may be issued by the City after September 30, 2015, but that modifications to the provisions and conditions of such Use CUPs by the City will prevent Lessor from completing the Work by December 31, 2016, then, on September 30, 2015, Lessor may notify Lessee of its written election to terminate this Lease effective as of September 30, 2015, in which event the parties shall be discharged from all further obligations hereunder except to the extent any obligations expressly survive the expiration or termination of this Lease; provided, however, that Lessor may not exercise such right to cancel this Lease unless (i) between September 15, 2015 and September 30, 2015, Lessor cooperates with Lessee and uses good faith efforts to develop and implement a strategy to cause the City to issue the Use CUPs by September 30, 2015 and in a manner that allows the Work to be completed by December 31, 2016 (provided that Lessee cooperates with Lessor and uses good faith efforts in connection with developing and implementing such strategy which cooperation may include good faith efforts to cause Lessee's current landlord to cooperate as necessary) and (ii) Lessor has used its good faith efforts to obtain the Use CUPs in such form prior to September 15, 2015. Notwithstanding the foregoing, if the Use CUPs are issued at any time between September 16, 2015 and September 30, 2015, inclusive, in a form that will allow Lessor to complete the Work by December 31, 2016, then Lessor shall have no right to terminate the Lease under this paragraph.

(iv)If the Building Permit (defined below) for the Market Ready Improvements and Tenant Improvements have not been issued by March 11, 2016, which date shall be extended one (1) day for each day of Tenant Delay (such date, as extended, the "**First Cancellation Option**"), then Lessee may terminate this Lease on written notice to Lessor given any time after March 11, 2016 and prior to issuance of the Building Permit for the Market Ready Improvements and the Tenant Improvements.

(v)If the Commencement Date has not occurred by December 31, 2016, which date shall be extended one (1) day for each day of Tenant Delay, then Lessee may terminate this Lease on written notice to the Lessor given prior to the occurrence of the Commencement Date (the "**Second Cancellation Option**").

If the Lease is terminated as herein provided in Paragraph 2(c)(ii), 2(c)(iii), 2(c)(iv), or 2(c)(v), Lessor shall refund to Lessee any pre-paid Rent and the Security Deposit within five (5) business days thereafter.

(d)If Substantial Completion of the Work is delayed as the result of a Tenant Delay, the Commencement Date shall occur on the date Substantial Completion of the Work would have occurred but for the Tenant Delays (as determined in accordance with this Lease and the Work Letter) and Lessor shall have no liability for any damages arising from a Tenant Delay.

(e)Lessee acknowledges that the applicable ordinance of the City requires that Lessee must obtain a Conditional Use Permit for Hazardous Materials ("**Haz Mat CUP**") from the City if Lessee maintains on the Premises five (5) gallons or more of Hazardous Materials (as defined in Paragraph 10). Accordingly, for the period from the Lessee's first Early Entry, defined below, until the date Lessee obtains the Haz Mat CUP from the City permitting

Lessee to maintain on the Premises five (5) gallons or more of Hazardous Materials (estimated to be approximately seventy-five (75) days), Lessee shall maintain less than five (5) gallons of Hazardous Materials on the Premises. Lessee shall promptly apply for and shall use its commercially reasonable good faith diligent efforts to comply with the City's requirements for the issuance to Lessee of the Haz Mat CUP. Lessor shall assist Lessee in the filing and processing of the application for the Haz Mat CUP, and Lessee shall pay all costs associated with such efforts, including but not limited to the costs and fees incurred by Green Environment and DES Architects/Engineers as well as City fees associated with the Haz Mat CUP; provided, however, Lessor shall not be responsible for the issuance of the Haz Mat CUP. Lessee shall deliver a copy of the Haz Mat CUP to Lessor and Lessee shall comply with the provisions thereof.

(f)Lessee acknowledges that in addition to the Haz Mat CUP described above to be obtained by Lessee, Lessor must obtain an architectural control use permit ("**Architectural CUP**"), a change of use permit ("**Use CUP**"), and a building permit (the "**Building Permit**") (cumulatively, the "**Critical Permits**") from the City prior to the commencement of construction of any Market Ready Improvements (defined in the Work Letter) and Tenant Improvements (both more particularly described in Schedule "F-3" and Schedule "F-4") to Exhibit "F"). As consideration for its time, effort and expense, including the engagement of third party services in connection with the design and engineering of the both the Market Ready Improvements and the Tenant Improvements and engaging in the permitting application and approval process for the Critical Permits, and subject to Section 14 of the Work Letter, Lessee agrees to reimburse Lessor ("**Lessee's Share of the Permit Expenses**") for fifty percent (50%) of the total third party costs, fees and expenses incurred by Lessor associated with the design and permitting of the Premises until Lessor receives the Use CUPs from the City and the fifteen (15) day appeal period has lapsed without appeal (or, if appealed, the City has confirmed the Use CUPs in all material respects) (the "**CUP Costs**"), such reimbursement not to exceed Two Hundred Thousand Dollars ($200,000). Lessee shall remit to Lessor, Lessee's Share of the Permit Expenses within ten (10) days of Lessee's receipt of invoice therefor, from time to time. Following the issuance of the Use CUPs and the lapse of the fifteen (15) day appeal period without appeal (or, if appealed, the City has confirmed the Use CUPs in all material respects), Lessor's and Lessee's payment obligations with respect to the CUP Costs shall be determined in accordance with the percentage allocation of costs set forth in Section 14(a) of this Lease (i.e., to the extent such costs are part of the Tenant Improvement Shortfall, Lessee shall pay Lessee's Tenant Improvement Shortfall percentage thereof on a monthly basis and receive a credit for any payment in excess of Lessee's Tenant Improvement Shortfall percentage paid by Lessee up to the fifty percent (50%) paid prior to the issuance of the permits and lapse of the appeal period discussed above). To the extent Lessee paid to Lessor Share of Permit Expenses for any portion of the Cup Costs necessary in obtaining the Use CUPs, those fees shall not be refundable and Lessee shall have no right to reimbursement from Lessor for such fees if Lessee terminates this Lease in accordance with Paragraphs 2(c)(ii), 2(c)(iii), 2(c)(iv) or 2(c)(v).

(g)Provided Lessor has first received (i) the first month's Base Rent (subject to Section 14 of the Work Letter) and (ii) the insurance certificates required under Paragraph 12(a), from and after the Effective Date, Lessee may have access to the Premises subject to the following requirements: (1) Lessee shall first coordinate its access into the construction zone

with both Lessor and the General Contractor by providing each reasonable advance notice, a description of any work to be performed by Lessee during such access and any additional information which may be required by either the General Contractor or Lessor, and (2) Lessee agrees to abide by all of the General Contractor's safety requirements, including being personally escorted by a representative of the General Contractor at all times while in the construction zone if determined necessary in the sole but reasonable discretion of the General Contractor. Such access to the Premises prior to the Commencement Date shall be referred to herein as "**Early Entry**". During the course of any Early Entry, all terms and conditions of this Lease, except for the obligation to pay Monthly Base Rent (as defined in Paragraph 5 below), Additional Rent (as defined in Paragraph 6 below) and utilities pursuant to Paragraph 16 below, shall apply. Lessor shall have the right to impose additional reasonable conditions upon Lessee's Early Entry and if Lessor and the General Contractor determine it is reasonably necessary to do so, Lessor may revoke Lessee's Early Entry for the protection of persons and property in the construction zone. Lessee shall not interfere with the construction of the Work (defined in the Work Letter) including the Tenant Improvements and any such interference resulting in a delay in the Construction Schedule (attached to the Work Letter as Schedule "F-5") shall be eligible to be a Tenant Delay pursuant to the terms of the Work Letter.

3. Option to Extend.

(a) Lessor hereby grants to Lessee one (1) option to extend the Term of this Lease (the "**Option to Extend**") for a period of sixty (60) months (the "**Extended Term**") immediately following the expiration of the Term. Lessee may exercise the Option to Extend by giving written notice of exercise to Lessor at least twelve (12) months but no more than fifteen (15) months prior to the expiration of the initial Term of this Lease (the "**Option Exercise Period**"), time being of the essence; provided that if (i) at any time between the date of delivery of the exercise notice by Lessee and the end of the initial Term there is an uncured default continuing beyond any applicable notice and cure periods, or (ii) Lessee is then occupying and conducting operations for the Use permitted in Paragraph 9 in less than fifty-one percent (51%) of the Premises, then such notice shall be void and of no force or effect. The Extended Term, if the Option to Extend is exercised, shall be upon the same terms and conditions as the initial Term of this Lease, including the payment by Lessee of the Additional Rent pursuant to Paragraph 6, except that (1) Lessee shall pay Monthly Base Rent, as determined as set forth in this Paragraph 3, during the Extended Term, (2) there shall be no additional option to extend, and (3) Lessee shall accept the Premises in their then "as is" condition. If Lessee does not exercise the Option to Extend in a timely manner the Option to Extend shall lapse, time being of the essence.

(b) The Option to Extend granted to Lessee by this Paragraph 3 is granted for the personal benefit of the named Lessee and any Permitted Transferees only, and shall be exercisable only by the herein named Lessee and any Permitted Transferees. The Option to Extend may not be exercised by any assignee or transferred to or exercised by any sublessee (nor exercised by Lessee on behalf of any sublessee (except to the extent that Lessee is then subleasing not more than forty-nine percent (49%) of the Premises)) other than any Permitted Transferee.

(c)The Monthly Base Rent for the Premises during the Extended Term shall be determined pursuant to the provisions of this Paragraph 3(c) and shall equal the then current fair market rental for the Premises on the commencement date of the Extended Term as determined by agreement between the Lessor and Lessee reached prior to the expiration of the Option Exercise Period, if possible, and by the process of broker appraisal if the parties cannot reach agreement.

(d)Upon the written request by Lessee to Lessor received by Lessor at any time during the thirty (30) day period prior to the expiration of the Option Exercise Period and prior to the exercise by Lessee of the Option to Extend, Lessor shall give Lessee written notice of Lessor's good faith opinion of the amount equal to the fair market rental value of the Premises for the Extended Term. Thereafter, upon the request of Lessee, Lessor and Lessee shall enter into good faith negotiations during the remainder of the thirty (30) days prior to the expiration of the Option Exercise Period in an effort to reach agreement on the initial Monthly Base Rent for the Premises during the Extended Term.

If Lessor and Lessee are unable to agree upon the amount equal to the fair market rental value of the Premises for the Extended Term, and thereafter, prior to the expiration of the Option Exercise Period, Lessee exercises the Option to Extend, said amount shall be determined by a licensed commercial real estate broker with at least ten (10) years of experience in the Menlo Park office/R&D/manufacturing rental market, (hereinafter the "**Arbitrator**"). The fair market rental determination shall be performed by one Arbitrator if the parties are able to agree upon one Arbitrator. If the parties are unable to agree upon one Arbitrator, then each party shall appoint an Arbitrator and the two Arbitrators shall select a third Arbitrator.

If only one Arbitrator is selected, that Arbitrator shall notify the parties in simple letter form of its determination of the amount equal to the fair market Monthly Base Rent for the Premises on the commencement date of the Extended Term within fifteen (15) days following its selection. Said appraisal shall be binding on the parties as the appraised current "fair market rental" for the Premises which shall be based upon what a willing new lessee would pay and a willing lessor would accept at arm's length for comparable premises in Menlo Park of similar age, size, quality of construction and specifications (excluding the value of any improvements to the Premises made at Lessee's cost with Lessor's prior written consent except as otherwise permitted herein) for a lease similar to this Lease and taking into consideration that there will be no free rent, improvement allowance, period of vacancy or other rent concessions, taken as a whole. If multiple Arbitrators are selected, each Arbitrator shall within ten (10) days of being selected make its determination of the amount equal to the fair market Monthly Base Rent for the Premises on the commencement date of the Extended Term in simple letter form. If two (2) or more of the Arbitrators agree on said amount, such agreement shall be binding upon the parties. If multiple Arbitrators are selected and two (2) Arbitrators are unable to agree on said amount, the amount equal to the fair market Monthly Base Rent for the Premises on the commencement date of the Extended Term shall be determined by taking the mean average of the appraisals; provided, that any high or low appraisal, differing from the middle appraisal by more than ten percent (10%) of the middle appraisal, shall be disregarded in calculating the average.

If only one Arbitrator is selected, then each party shall pay one-half of the fees and expenses of that Arbitrator. If three Arbitrators are selected, each party shall bear the fees and expenses of the Arbitrator it selects and one-half of the fees and expenses of the third Arbitrator.

(e)Thereafter, provided that Lessee has previously given timely notice to Lessor of the exercise by Lessee of the Option to Extend, Lessor and Lessee shall execute an amendment to this Lease stating that the initial Monthly Base Rent for the Premises during the Extended Term shall be equal to the determination by appraisal.

4.Right of First Offer. Lessor and Lessee acknowledge that Lessor may (but is not obligated to) construct a new building ("**New Building**") adjacent to the Building in which the Premises are located. Subject to the currently existing rights set forth in the existing leases of any existing lessees in the Menlo Business Park, if, during the Term, any space in the Building or space in the New Building becomes available for direct lease for the first time during the Term hereof (the "**Available Space**"), (note, not all vacant space shall be considered Available Space and it is Lessor who shall determine when space is Available Space hereunder in its sole and absolute discretion), then Lessor shall first offer to lease the Available Space to Lessee by delivering notice to Lessee (the "**Availability Notice**"). Lessor's obligation to provide Lessee with the Availability Notice hereunder shall be a one-time occurrence as Available Space in the Building and/or Available Space in the New Building (if any) becomes available and Lessee's right hereunder shall be a one-time right as to each of the Building and the New Building, accordingly. The Availability Notice shall set forth the terms upon which Lessor would be willing to lease the Available Space to a third party, as determined by Lessor in its sole discretion. Lessee shall have five (5) business days after receipt of the Availability Notice to unconditionally accept in writing or reject the terms set forth in the Availability Notice, it being understood that Lessee's failure to respond within such five (5) business day period shall be deemed a rejection of such terms. If Lessee does not unconditionally accept in writing the terms set forth in the Availability Notice within such five (5) business day period, then Lessee's rights under this Paragraph 4 shall lapse and terminate and Lessor shall be entitled to lease the Available Space to any other party on substantially the same terms as contained in the Availability Notice; provided that the rental rate (taking into account adjustments for any differences between so called "net" leases and "gross" leases) shall be no less, and the lessee improvement allowance, if any, shall be no more than that originally offered to Lessee in the Availability Notice. If Lessee accepts in writing the terms set forth in the Availability Notice, then for the period starting on the date of Lessor's delivery of the Availability Notice to Lessee and ending thirty (30) days thereafter (the "**Waiting Period**"), Lessor shall not enter into any binding agreement to lease the Available Space with any other party or market the Available Space for lease. During the Waiting Period, Lessor and Lessee shall enter into a written amendment to this Lease or a new lease (a "**Definitive Agreement**"), consistent with the terms set forth in the Availability Notice and otherwise on the terms and conditions of this Lease. If Lessee and Lessor fail to execute and deliver a Definitive Lease Agreement within the Waiting Period, then Lessee's rights under this Paragraph 4 shall lapse and terminate, and Lessor shall be entitled to lease the Available Space to any other party on such term as Lessor desires. Lessor shall not be required to offer the Available Space to Lessee during any period in which an event of default has occurred and is continuing. Furthermore, unless expressly mentioned and approved in the written consent of Lessor to any assignment or subletting as provided in this Lease, the

right of first offer to lease under this Paragraph 4 is granted for the personal benefit of the named Lessee herein and any Permitted Transferee and may not be exercised by any assignee or sublessee (other than a Permitted Transferee) nor exercised by Lessee on behalf of a sublessee.

5.Monthly Base Rent.

(a)Commencing on the Commencement Date and continuing on the first day of each calendar month thereafter until the end of the Term, Lessee shall pay to Lessor in monthly installments in advance the Monthly Base Rent for the Premises in lawful money of the United States as follows:

Months	Square Feet	$/SF/Mo./NNN	Monthly Base Rent
1-12	180,000	$3.00*	$540,000.00*
13-24	180,000	$3.15	$567,000.00
25-36	180,000	$3.20	$576,000.00
37-48	180,000	$3.25	$585,000.00
49-60	180,000	$3.35	$603,000.00
61-72	180,000	$3.45	$621,000.00
73-84	180,000	$3.55	$639,000.00
85-96	180,000	$3.65	$657,000.00
97-108	180,000	$3.75	$675,000.00
109-120	180,000	$3.85	$693,000.00
121-132	180,000	$3.95	$711,000.00

* Lessee's Monthly Base Rent shall be abated for the first six (6) months of the Lease Term following the Commencement Date (the "**Abatement Period**"), if and for so long as Lessee is not in material monetary default under this Lease. If Lessee cures such material monetary default under this Lease during the Abatement Period, then following such cure Lessee's Monthly Base Rent shall continue to be abated as of the date of such cure; provided, however, that Lessee shall not be entitled to extend the Abatement Period for the period of time that Lessee was in material monetary default of the Lease and shall not be entitled to recoup any portion of Monthly Base Rent attributable to the period of time that Lessee was in material monetary default of the Lease. In the event a dispute regarding whether a material monetary default has occurred for purposes of determining if Lessee is entitled to Abated Base Rent in accordance with the terms of this Paragraph results in litigation or other proceeding and Lessee

prevails in such litigation or other proceeding, then Lessee shall be entitled to abate the Monthly Base Rent attributable to the period of time that Lessee was improperly determined to be in material monetary default of the Lease. The total eligible abatement of Monthly Base Rent pursuant to the foregoing based on the assumption that Lessee is not in material monetary default during the Abatement Period shall be Three Million, Two Hundred Forty Thousand and no/100s Dollars ($3,240,000.00). The foregoing abatement of Monthly Base Rent payable by Lessee shall not be construed as an abatement of any other rent, Additional Rent, or charges payable under this Lease. If Lessee defaults under the terms of this Lease, and such default results in the termination of this Lease in accordance with the provisions of Paragraph 23 (*Remedies*) of this Lease, then the unamortized amount of the abatement of Monthly Base Rent through the date of such termination ("**Abated Base Rent**"), amortized on a straight-line basis over the initial Term, shall immediately become due and payable as part of Additional Rent under this Lease as of the day prior to such termination. In such event, as a part of the recovery set forth in Paragraph 23, Lessor shall be entitled to recover, in addition to any other amounts due from Lessee, the amount of the Abated Base Rent due under this Paragraph 5(a) as Additional Rent.

(b)Subject to Section 14 of the Work Letter, (i) upon the execution and delivery of this Lease by Lessee, Lessee shall pay to Lessor the sum of Five Hundred Forty Thousand and no/100s Dollars ($540,000.00) which shall be applied to the installment of Monthly Base Rent due for the first month in which Monthly Base Rent is due following the Commencement Date and (ii) upon thirty (30) days after the City's issuance of the Use CUPs and the lapse of the fifteen (15) day appeal period without appeal (or, if appealed, the City has confirmed the Use CUPs in all material respects), Lessee shall pay to Lessor the sum of One Million Six Hundred Twenty Thousand and no/100s Dollars ($1,620,000.00) which shall be applied to the installments of Monthly Base Rent due for the second, third and fourth months in which Monthly Base Rent is due following the Commencement Date. Thereafter, Monthly Base Rent shall be paid monthly in advance on the first day of each calendar month. Lessee shall also pay to Lessor no later than March 15, 2016, the amount of One Hundred Eighty Thousand and no/100s Dollars ($180,000.00) or Lessor's then current estimate of Additional Rent (as hereinafter defined), which amount shall be applied to the Additional Rent for the first calendar month of the Term.

Upon thirty (30) days after the City's issuance of the Use CUPs and the lapse of the fifteen (15) day appeal period without appeal (or, if appealed, the City has confirmed the Use CUPs in all material respects), and subject to Section 14 of the Work Letter, Lessee shall deliver to Lessor the Security Deposit (as defined in Paragraph 8 below).

6.Additional Rent; Operating Expenses and Taxes.

(a)In addition to the Monthly Base Rent payable by Lessee pursuant to Paragraph 5, commencing on the Commencement Date, Lessee shall pay to Lessor, as "**Additional Rent**" (1) Lessee's Pro Rata Share (as defined in in this Paragraph 6(a)) of the Operating Expenses (as defined in Paragraph 6(b) below) of the Property, (2) Lessee's Pro Rata Share of the operating expenses for the Menlo Business Park of which the Property is a part in accordance with this Paragraph 6(a) (such expenses referred to herein as the "**Park Expenses**"), and (3) Lessee's Pro Rata Share of the Taxes (as defined in Paragraph 6(c) below). "**Lessee's**

Pro Rata Share" shall be equal to the ratio of the number of square feet of the Premises to the rentable square footage of the Building (currently, Lessee's Pro Rata Share is 82.66% (180,000/217,770)); provided, however, that Lessee's "**Pro Rata Share**" with respect to Park Expenses shall instead be equal to Lessee's Pro Rata Share multiplied by the ratio of the number of square feet of the Land allocable to the Property to the total number of square feet of land in Menlo Business Park, as shown on Exhibit "B", as such land may be expanded or reduced from time to time by additions or subtractions to the Park (currently, Lessee's Pro Rata Share with respect to Park Expenses is 19.58% (180,000/217,770 * 23.68%)). Upon the earlier of commencement of the construction of the New Building or the Parking Structure or the demolition of the Building required in connection therewith, the rentable square footage of the Building, Lessee's Pro-Rata Share and Lessee's Pro-Rata Share with respect to Park Expenses shall be adjusted in a fair and reasonable manner and the definition of Property shall be re-defined in a fair and reasonable manner. The Park Expenses currently include maintenance of the common areas of Menlo Business Park, parking lot lighting (cost of electricity and maintenance of the fixtures), maintenance of the network conduit, all landscape maintenance and irrigation of Menlo Business Park, Lessor's insurance coverages of Menlo Business Park, security patrol and real estate and other taxes for land and improvements to the Menlo Business Park which are for the benefit of all occupants of the Menlo Business Park. The Park Expenses may include other commercially reasonable items from time to time during the term of this Lease but shall exclude any expense that is properly allocated to the owner or to the lessees of any other building in the Menlo Business Park. Monthly Base Rent and Additional Rent are referred to herein collectively as "**Rent**."

(b)"**Operating Expenses**," as used herein, shall include all commercially reasonable direct costs actually incurred by Lessor in the management, operation, maintenance, repair and replacement of the Property, including the cost of all maintenance, repairs, and restoration of the Property performed by Lessor pursuant to Paragraphs 15(b) and 15(c) hereof, as determined by generally accepted accounting principles (unless excluded by this Lease), including, but not limited to:

Personal property taxes related to the Premises; any parking taxes or parking levies imposed on the Premises in the future by any governmental agency; a management fee charged for the management and operation of the Menlo Business Park, in an amount equal to (i) four percent (4%) of the total gross income received by Lessor from the Lessee (including Monthly Base Rent and Additional Rent) until the earlier of the date Lessor commences demolition of the Building in connection with the construction of the New Building or the Parking Structure or three (3) years from the Commencement Date and (ii) three percent (3%) of the total gross income received by Lessor from the Lessee (including Monthly Base Rent and Additional Rent) thereafter (the "**Property Management Fee**"), and not just Lessee's Pro Rata Share of this fee; water and sewer charges; waste disposal; commercially reasonable insurance premiums for insurance coverages maintained by Lessor pursuant to Paragraph 12(b) hereof; license, permit, and inspection fees; charges for electricity, heating, air conditioning, gas, and any other utilities (including, without limitation, any temporary or permanent utility surcharge or other exaction) to the extent such utilities are not separately metered and payable directly by Lessee; security; maintenance, repair, and replacement of the roof membrane; painting and repairing, interior and exterior; maintenance and replacement of floor and window coverings; repair, maintenance and

replacement of air conditioning, heating, mechanical and electrical systems, elevators (if any), plumbing and sewage systems; janitorial service (if provided by Lessor); landscaping, gardening, and tree trimming; glazing; repair, maintenance, cleaning, sweeping, striping, and resurfacing of the parking area; exterior Building lighting and parking lot lighting; supplies, materials, equipment and tools used in the maintenance of the Property; costs for accounting services incurred in the calculation of Operating Expenses and Taxes as defined herein; and the cost of any other capital expenditures for any improvements or changes to the Building which are required by laws, ordinances, or other governmental regulations adopted after the Commencement Date, or for any items or capital expenditures voluntarily made by Lessor which are intended to and have the effect of reducing Operating Expenses; provided, however, that except for capital improvements required because of Lessee's specific use of the Property, if Lessor is required to or voluntarily makes such capital improvements, Lessor shall amortize the cost of said improvements over the useful life of said improvements calculated in accordance with generally accepted accounting principles (together with interest on the unamortized balance at the rate equal to the effective rate of interest on Lessor's bank line of credit at the time of completion of said improvements, but in no event in excess of ten percent (10%) per annum) as an Operating Expense in accordance with generally accepted accounting principles, except that with respect to capital improvements made to save Operating Expenses such amortization shall not be at a rate greater than the actual savings in Operating Expenses (collectively, "**Permitted Capital Expenses**"); the Compensation (defined in subsection (d)(6) below) of any employee or building manager, provided any such employee or building manager who does not devote substantially all of his or her employed time to the Menlo Business Park shall be prorated to reflect time spent on operating and managing the Menlo Business Park vis-à-vis time spent on matters unrelated to operating and managing the Menlo Business Park; and, Operating Expenses shall also include any other reasonable expense or charge actually incurred by Lessor, whether or not described herein not specifically excluded by other provisions of this Lease, which in accordance with generally accepted accounting principles would be considered an expense of managing, operating, maintaining, and repairing the Property. Notwithstanding the foregoing, Lessee shall have the option of paying Lessee's Pro Rata Share of any such cost for capital expenditures in a single lump-sum payment without incurring interest expense on such amounts.

Notwithstanding the preceding, in conjunction with the allocation of service, maintenance, repair and replacement responsibilities pursuant to Paragraph 15, below, so long as Lessee satisfies the Maintenance Requirements (defined in Paragraph 15(b)), the parties agree that Lessee shall directly assume responsibility for, contract directly with any service providers for, and pay directly for the following, which amounts shall, for so long as this arrangement is permitted by Lessor, be excluded from Operating Expenses above:

(i) all service, maintenance, repair and replacement of heating, ventilation, air conditioning, mechanical and electrical systems within the Premises or serving the Premises from the rooftop pad or the equipment pads immediately adjacent to the Premises; and,

(ii) all service, maintenance, repair and replacement of plumbing and interior sewage systems within the Premises.

(c)Real property taxes and assessments upon the Property, during each lease year or partial lease year during the term of this Lease are referred to herein as "Taxes."

As used herein, "**Taxes**" shall mean:

(1)all real estate taxes, assessments, charges and any other taxes which are levied or assessed against the Property including the Land, the Building, and all improvements located thereon, including any increase in Taxes resulting from a reassessment following any transfer of ownership of the Property or any interest therein or following any improvements to the Property; and

(2)all other taxes which may be levied in lieu of real estate taxes, assessments, and other fees, charges, and levies, general and special, ordinary and extraordinary, unforeseen as well as foreseen, of any kind and nature by any authority having the direct or indirect power to tax, including without limitation any governmental authority or any improvement or other district or division thereof, for public improvements, services, or benefits which are assessed, levied, confirmed, imposed, or become a lien (1) upon the Property, and/or any legal or equitable interest of Lessor in any part thereof; or (2) upon this transaction or any document to which Lessee is a party creating or transferring any interest in the Property; and (3) any tax or excise, however described, imposed in addition to, or in substitution partially or totally of, any tax previously included within the definition of "Taxes" or any tax the nature of which was previously included in the definition "Taxes."

Not included within the definition of "Taxes" and Park Expenses are any net income, profits, transfer, franchise, estate, gift, rental income, or inheritance taxes imposed by any governmental authority. "Taxes" also shall not include penalties or interest charges assessed on delinquent Taxes so long as Lessee is not in default in the payment of Monthly Base Rent or Additional Rent beyond applicable notice and cure periods.

With respect to any assessments which may be levied against or upon the Property or the Land, which under the laws then in force may be evidenced by improvement or other bonds, or may be paid in annual installments, only the amount of such annual installment (with appropriate proration of any partial year) and statutory interest shall be included within the computation of the annual Taxes levied against the Property.

(d)Notwithstanding anything to the contrary herein, the following costs ("**Costs**") shall be excluded from the definition of Operating Expenses and Park Expenses:

(1)Costs occasioned by the act, omission or violation of law by Lessor, any other occupant of Menlo Business Park, or their respective agents, employees or contractors;

(2)Costs for which Lessor has a right of reimbursement from others, including reimbursement from insurance;

(3)Interest, charges and fees incurred on debt or payments on any deed of trust or ground lease on the Property, or Menlo Business Park;

(4)Advertising or promotional costs or other costs incurred by Lessor in procuring tenants for the Property or other portions of Menlo Business Park;

(5)Costs incurred in repairing, maintaining or replacing any structural elements of the Building for which Lessor is responsible pursuant to Paragraph 15(a) hereof;

(6)Any wages, bonuses or other compensation ("**Compensation**") of employees above the grade of building manager; any Compensation of any officer or director of Lessor;

(7)General office overhead and general and administrative expenses of Lessor, except as specifically provided in Paragraph 6(b);

(8)Leasing expenses and broker commissions payable by Lessor;

(9)Costs occasioned by casualties or by the exercise of the power of eminent domain;

(10)Costs to correct any construction defect in the Building or the Premises existing on the Commencement Date;

(11)Costs of any renovation, improvement, painting or redecorating of any portion of the Property or the Menlo Business Park not made available for Lessee's use;

(12)Costs incurred in connection with negotiations or disputes with any other tenant or occupant of the Menlo Business Park and costs arising from the violation by Lessor or any other tenant or occupant of the Menlo Business Park of the terms and conditions of any other lease or agreement;

(13)Costs incurred in connection with the presence of any Hazardous Materials on the Property or on other property in Menlo Business Park that were not caused by or the result of a release by Lessee or its employees, agents, contractors, invitees, sublessees, successors or assigns; and

(14)Expense reserves;

(15)Capital costs except Permitted Capital Expenses (for clarification, Permitted Capital Expenses may include replacement or large scale repair of equipment, machinery and systems if Lessor elects not to expense same);

(16)Costs occasioned by the willful misconduct or gross negligence;

(17)Costs paid to affiliates of Lessor for services that exceed the competitive cost for services and materials rendered by qualified unrelated persons or entities of similar skill, competence and experience in an arm's length transaction;

(18)Costs for sculpture, paintings, fountains or other objects of art;

(19)Charitable and political donations;

(20)Costs not normally included in reimbursable operating expenses by lessors of comparable buildings in the vicinity of the Building or which under generally accepted management practices would not be considered an expense of managing, operating, maintaining, or repairing the Building, or unless relating to a feature of the Building not present in similar buildings in the vicinity of the Building, that are not then being incurred by such similar buildings;

(21)Costs for services not provided to Lessee under the Lease or of a nature that are payable directly or provided by Lessee under the Lease, including without limitation, janitorial, refuse removal and utilities that are separately metered to the Premises;

(22)Costs in connection with maintenance of any rooftop garden located on the roof of the Building; and

(23)Costs to obtain the Critical Permits;

(24)Insurance cost increases caused by the activities of another occupant of Menlo Business Park; and

(25)Any fee, profit or Compensation retained by Lessor or its affiliates for management and administration of the Property or the Menlo Business Park other than the Property Management Fee, provided, however, that the Property Management Fee does not include and Operating Expenses shall include any Compensation paid to accountants, building engineers or any other specialist employed by Lessor wholly dedicated to the Park or a reasonable allocation of such Compensation if not wholly dedicated to the Park as set forth in Paragraph 6(b) above.

Lessor shall at all times use its commercially reasonable efforts to operate the Property in an economically reasonable manner at costs not disproportionately higher than those experienced by other comparable premises in the market area in which the Property is located (Menlo Park).

(e)Throughout the term of this Lease, as close as reasonably possible to the end of each calendar year thereafter but no later than April 1 of the following year, Lessor shall notify Lessee of the Operating Expenses, Taxes and Park Expenses estimated by Lessor for each

following calendar year. Concurrently with such notice, Lessor shall provide a description of such Operating Expenses, Taxes and Park Expenses. Commencing on the Commencement Date, and on the first (1st) day of each calendar month thereafter, Lessee shall pay to Lessor, as Additional Rent, one-twelfth (1/12th) of the estimated Operating Expenses, Taxes and Park Expenses. If at any time during any such calendar year, it appears to Lessor that the Operating Expenses, Taxes or Park Expenses for such year will vary from Lessor's estimate, Lessor may, by written notice to Lessee, revise Lessor's estimate for such year and the Additional Rent payments by Lessee for such year shall thereafter be based upon such revised estimate. Lessor shall furnish to Lessee with such revised estimate written verification showing that the actual Operating Expenses, Taxes or Park Expenses are greater than Lessor's estimate. The increase in the monthly installments of Additional Rent resulting from Lessor's revised estimate shall not be retroactive, but the Additional Rent for each calendar year shall be subject to adjustment between Lessor and Lessee after the close of the calendar year, as provided below.

Within approximately ninety (90) days after the expiration of each calendar year of the Term, Lessor shall furnish Lessee a statement certified by a responsible employee or agent of Lessor (the "**Operating Statement**") with respect to such year, prepared by an employee or agent of Lessor, showing the actual Operating Expenses, Taxes and Park Expenses for such year broken down by component expenses, and the total payments made by Lessee for such year on the basis of any previous estimate of such Operating Expenses, Taxes and Park Expenses, all in sufficient detail for verification by Lessee. Unless Lessee raises any objections to the Operating Statement within ninety (90) days after receipt of the same, such statement shall conclusively be deemed correct and Lessee shall have no right thereafter to dispute such statement or any item therein or the computation of Operating Expenses and/or Taxes and/or Park Expenses. Upon giving Lessor five (5) days' advance written notice, Lessee or its accountants shall have the right to inspect and audit Lessor's books and records with respect to the Operating Statement in an office of Lessor, or Lessor's agent, during normal business hours, once each Lease Year to verify actual Operating Expenses and/or Taxes and/or Park Expenses. Should Lessee retain any accountant or accounting firm to audit or inspect Lessor's books and records pursuant to this Paragraph 6(e), such accountant or accounting firm shall be one of national standing and retained on an hourly rate basis or based upon a fixed fee and shall not be paid on a contingency basis and shall execute a commercially reasonable confidentiality agreement regarding such audit and inspection. Lessor's books and records shall be kept in accord with generally accepted accounting principles. If Lessee's audit of the Operating Expenses and/or Taxes and/or Park Expenses for any year reveals a net overcharge of more than five percent (5%), Lessor shall promptly reimburse Lessee for the cost of the audit; otherwise, Lessee shall bear the cost of Lessee's audit. If Lessee reasonably objects to Lessor's Operating Statement, Lessee shall nonetheless continue to pay on a monthly basis the Operating Expenses, Taxes and Park Expenses based upon Lessor's most current estimate until such dispute is resolved.

If Lessee's Pro Rata Share of the Operating Expenses and Taxes and Lessee's Pro Rata Share of Park Expenses for any year as finally determined exceed the total payments made by Lessee for such year based on Lessor's estimates, Lessee shall pay to Lessor the deficiency, within thirty (30) days after the receipt of Lessor's Operating Statement. If the total payments made by Lessee based on Lessor's estimate of the Operating Expenses and/or Taxes and/or Park Expenses exceed the Lessee's Pro Rata Share of Operating Expenses and/or Taxes and/or

Lessee's Pro Rata Share of Park Expenses as finally determined, Lessee's extra payment, plus the cost of an audit, if any, which is the responsibility of Lessor pursuant to the terms set forth herein shall be credited against payments of Monthly Base Rent and Additional Rent next due hereunder or returned within thirty (30) days if the Term has expired or this Lease has been terminated.

Notwithstanding the expiration or termination of this Lease, within thirty (30) days after Lessee's receipt of Lessor's Operating Statement or the completion of Lessee's audit regarding the Operating Expenses and/or Taxes and/or Park Expenses for the calendar year in which this Lease terminates, Lessee shall pay to Lessor or shall receive from Lessor, as the case may be, an amount equal to the difference between the Operating Expenses and/or Taxes and/or Park Expenses for such year, as finally determined, and the amount previously paid by Lessee on account thereof (prorated to the expiration date or the termination date of this Lease).

7.Payment of Rent.

(a)All Rent shall be due and payable in lawful money of the United States of America made payable to and addressed to: Menlo Park Portfolio II, LLC, P.O. Box 310300, Property: 435610, Des Moines, IA 50331-0300 without deduction or offset and without prior demand or notice, unless otherwise specified herein. Monthly Base Rent and Additional Rent shall be payable monthly, in advance, on the first day of each month. Additional Rent shall be payable monthly, in advance, on the first day of each month for the entire Premises for the entire term of his Lease. Lessee's obligation to pay Rent for any partial month at the commencement of the term, for any partial month immediately prior to a rental adjustment date (if the rental adjustment date is other than the first day of the calendar month), and for any partial month at the expiration or termination of the term shall be based upon the number of days in such month.

(b)If any installment of Monthly Base Rent, Additional Rent or any other sum due from Lessee is not received by Lessor within five (5) days after the same is due, Lessee shall pay to Lessor an additional sum equal to five percent (5%) of the amount overdue as a late charge. The parties agree that this late charge represents a fair and reasonable estimate of the costs that Lessor will incur by reason of the late payment by Lessee. Acceptance of any late charge shall not constitute a waiver of Lessee's default with respect to the overdue amount. Any amount not paid within ten (10) days after Lessee's receipt of written notice that such amount is due shall bear interest from the date due until paid at the lesser rate of (1) the prime rate of interest as published in the Wall Street Journal, plus two percent (2%) or (2) the maximum rate allowed by law (the "**Interest Rate**"), in addition to the late payment charge.

Initials: Lessor _____ Lessee _____

8.Security Deposit. Subject to Section 14 of the Work Letter, Lessee shall deposit with Lessor not later than thirty (30) days after the issuance of the Use CUP and the lapse of the fifteen (15) day appeal period without appeal (or, if appealed, the City has confirmed the Use CUPs in all material respects), the sum of Four Million Five Hundred Thousand and no/100s Dollars ($4,500,000.00) (the "**Security Deposit**"), which shall be in the form of an irrevocable standby letter of credit (the "**Letter of Credit**") as security for Lessee's faithful performance of

Lessee's obligations under this Lease. Provided that no monetary event of default beyond applicable notice and cure periods with respect to the payment of Rent is occurring or has occurred more than one time within the last twelve (12) months prior to each Reduction Date and provided that no monetary event of default beyond applicable notice and cure periods with respect to monetary obligations other than the payment of Rent and which obligations are equal to or greater than Fifty Thousand Dollars ($50,000.00) is occurring or has occurred more than one time within the last twelve (12) months prior to each Reduction Date, then the Security Deposit shall be reduced on each Reduction Date by the following amounts:

Reduction Date	Security Deposit
First day of 31st Month	$4,000,000.00
First day of 43rd Month	$3,500,000.00
First day of 55the Month	$3,000,000.00
First day of 67th Month	$2,500,000.00
First day of 79th Month	$2,000,000.00
First day of 91st Month	$1,500,000.00

(The schedule as set forth above, the "**Security Reduction Schedule**"). If Lessee is not permitted to reduce the Security Deposit on any given Reduction Date for failure to meet the requirements above, provided Lessee meets them on a future Reduction Date, Lessee may resume the reductions in accordance with the Security Reduction Schedule.

If Lessee fails to pay Monthly Base Rent or Additional Rent or charges due hereunder within applicable notice and cure periods, or otherwise defaults beyond applicable notice and cure periods under this Lease (as defined in Paragraph 23), Lessor may use, apply or retain all or any portion of said Security Deposit to the extent reasonably necessary to cure the default, for the payment of any amount due Lessor, and to reimburse or compensate Lessor for any liability, cost, expense, loss or damage (including attorneys' fees) which Lessor may suffer or incur by reason thereof. If Lessor uses or applies all or any portion of the Security Deposit, Lessee shall within ten (10) days after written request therefor deposit with Lessor the amount sufficient to restore the Security Deposit to the original amount required by this Lease. Lessor shall not be required to keep all or any part of the Security Deposit separate from its general accounts. In no event or circumstance shall Lessee have the right to any use of the Security Deposit and,

specifically, Lessee may not use the Security Deposit as a credit or to otherwise offset any payments required hereunder, including, but not limited to, Rent or any portion thereof. Lessee waives (i) California Civil Code Section 1950.7 and any and all other laws, rules and regulations applicable to security deposits in the commercial context ("**Security Deposit Laws**"), and (ii) any and all rights, duties and obligations either party may now have, or in the future will have, relating to or arising from the Security Deposit Laws. Notwithstanding anything to the contrary herein, the Security Deposit may be retained and applied by Lessor (a) to offset Rent which is unpaid either before or after termination of this Lease, and (b) against other damages suffered by Lessor before or after termination of this Lease that are recoverable by Lessor in accordance with the terms and conditions of this Lease, but the remainder of the Security Deposit, if any, shall be returned to Lessee within sixty (60) days after the Premises are delivered to Lessor in the condition required for surrender pursuant to Paragraph 15(d) and Paragraph 15(h). No part of the Security Deposit shall be considered to be held in trust, to bear interest or other increment for its use, or to be prepayment for any moneys to be paid by Lessee under this Lease.

Following Substantial Completion of the Work, Lessee shall have the option of substituting cash for all or any portion of such Letter of Credit, and, Lessor shall reasonably cooperate with Lessee to accommodate an amendment or replacement of such letter of credit in connection with any such election by Lessee; provided, however, the combination of the cash portion of the Security Deposit and the amount of the Letter of Credit shall at all times equal Four Million Five Hundred Thousand and no/100s Dollars ($4,500,000.00), subject to reduction of such amount in accordance with the limits set forth in the Security Reduction Schedule set forth above. The Letter of Credit shall be issued to Lessor, as beneficiary, in form and substance reasonably satisfactory to Lessor. The Letter of Credit shall be subject to the International Standby Practices of 1998, International Chamber of Commerce Publication No. 590 subject to the following: (1) notwithstanding Rule 4.09(c) of ISP98 and regardless of whether the words "exact" or "identical" or similar words are used in this Letter of Credit, a document presented under this Letter of Credit need not reproduce the wording in this Letter of Credit exactly, including typographical errors, punctuation, spacing, blank lines and spaces, and the like; and (2) notwithstanding Rule 5.06(c)(i) of ISP98, the presenter shall not be precluded from asserting an objection to a notice of discrepancy solely by reason of having requested that the documents be forwarded or that a waiver be sought. Lessor may draw upon the Letter of Credit, without prejudice to any other remedy provided in the Lease or by Applicable Law, to the extent necessary to satisfy an event of default by Lessee under this Lease. Any such draw on the Letter of Credit shall not constitute a waiver of any other rights of Lessor with respect to such event of default. The Letter of Credit shall be issued by a bank reasonably approved by Lessor and whose deposits are insured by the FDIC (such approved, issuing bank being referred to herein as the "**Bank**"), which Bank must have a short term Fitch Rating which is not less than "F2", a long term Fitch Rating which is not less than "BBB", a short term rating from Standard and Poor's Financial Services, LLC ("**S&P**") of not less than "A2", a long term S&P rating of not less than "BBB", a short term rating from Moody's Investor Service, Inc. ("**Moody's**") of not less than "P2", and a long term Moody's rating of not less than "Baa3" (collectively, the "**Bank Credit Rating Threshold**"). Lessor hereby approves of Wells Fargo Bank as an approved Bank. The Letter of Credit shall have an expiration date not earlier than the thirtieth (30th) day after the expiration of the Term (or, in the alternative, have a term of not less than one (1) year and be automatically renewable for an additional one (1) year period unless notice of non-renewal is

given by the issuer to Lessor not later than sixty (60) days prior to the expiration thereof) and shall provide that Lessor may make partial and multiple draws thereunder for any sum which Lessor may reasonably expend or may be required to expend by reason of such default by Lessee, up to the amount thereof. In addition, the Letter of Credit shall provide that, in the event of Lessor's assignment or other transfer of its interest in this Lease, the Letter of Credit shall be freely transferable by Lessor, without charge and without recourse, to the assignee or transferee of such interest and the bank shall confirm the same to Lessor and such assignee or transferee. The Letter of Credit shall provide for payment to Lessor upon the issuer's receipt of a sight draft from Lessor together with Lessor's certificate certifying that Lessor is entitled to such payment pursuant to the provisions of this Lease, and with no other conditions, shall be in form and content reasonably satisfactory to Lessor. If the Letter of Credit has an expiration date earlier than the thirtieth (30th) day after the expiration of the Term, then throughout the Term (including any renewal or extension of the Term) Lessee shall provide evidence of renewal of the Letter of Credit to Lessor at least sixty (60) days prior to the date the Letter of Credit expires. If Lessor draws on the Letter of Credit pursuant to the terms hereof, Lessee shall immediately replenish the Letter of Credit or provide Lessor with an additional letter of credit conforming to the requirement of this paragraph. In addition to the other reasons set forth herein entitling Lessor to draw down on the Letter of Credit, Lessor, or its then managing agent, shall also have the right to draw down an amount up to the face amount of the Letter of Credit if the applicable rating of the Bank has been reduced below the Bank's Credit Rating Threshold, and Lessee has failed to provide Lessor with a replacement letter of credit, conforming in all respects to the requirements of this Paragraph 8, within twenty-five (25) days following Lessor's written demand therefor (with no other notice or cure or grace period being applicable thereto, notwithstanding anything in this Lease to the contrary). In addition, in the event the Bank is placed into receivership or conservatorship by the Federal Deposit Insurance Corporation or any successor or similar entity, then, effective as of the date such receivership or conservatorship occurs, said Letter of Credit shall be deemed to fail to meet the requirements of this Paragraph 8, and, within twenty-five (25) days following Lessor's notice to Lessee of such receivership or conservatorship, Lessee shall replace such Letter of Credit with a substitute letter of credit from a different issuer (which issuer shall meet or exceed the Bank's Credit Rating Threshold) and that complies in all respects with the requirements of this Paragraph 8. Lessee's failure to deliver any replacement, additional or extension of the Letter of Credit, or evidence of renewal of the Letter of Credit, within the time specified under this Lease shall entitle Lessor to draw upon the Letter of Credit then in effect and, at Lessor's election, constitute an event of default under this Lease. If Lessor liquidates the Letter of Credit as provided in the preceding sentence, Lessor shall hold the funds received from the Letter of Credit as security for Lessee's performance under this Lease in accordance with the requirements with respect to cash as set forth in this Paragraph 8, and Lessor shall not be required to segregate such Security Deposit from its other funds and no interest shall accrue or be payable to Lessee with respect thereto.

If Lessee is entitled to any reduction in the Security Deposit as more particularly set forth herein, then Lessor shall cooperate in a commercially reasonable manner with Lessee upon Lessee's request to replace or amend the then existing Letter of Credit to accommodate such reduction.

9.Use. Lessee may only use and occupy the Premises for general office uses, administrative purposes, research and development, laboratory, light manufacturing and related uses which are permitted under applicable laws including zoning ordinances, the covenants, conditions and restrictions for Menlo Business Park, and the City of Menlo Park and for no other use without the Lessor's prior written consent. Notwithstanding the preceding, the manufacture of integrated circuits using any caustic or toxic substance which poses a meaningful risk of accelerated deterioration or damage to the Building is expressly prohibited. Any use of the Premises by Lessee or by any sublessee or assignee approved by Lessor pursuant to Paragraph 18 shall comply with the provisions of this Paragraph 9.

10.Hazardous Materials.

(a)The term "**Hazardous Materials**" as used in this Lease shall include any substance defined or regulated as radioactive, flammable, toxic, a biohazard, medical waste, "hazardous material", "extremely hazardous material", "hazardous waste", "hazardous substance," "toxic substance," "industrial process waste," or "special waste" in any Environmental Laws as hereafter defined. Hazardous Materials shall include, but not be limited to, petroleum, gasoline, natural gas, natural gas liquids, liquefied natural gas, synthetic gas, and/or crude oil or any products, by-products or fractions thereof.

(b)Lessee shall not engage in any activity in or on the Premises or the Property which constitutes a Reportable Use of Hazardous Materials without the express prior written consent of Lessor and timely compliance (at Lessee's expense) with all Environmental Laws. "**Reportable Use**" shall mean (i) the installation or use of any above or below ground storage tank, (ii) the generation, possession, storage, use, transportation, or disposal of Hazardous Materials that require a permit from, or with respect to which a report, notice, registration or business plan is required to be filed with, any governmental authority, and/or (iii) the presence at the Premises or the Property of Hazardous Materials with respect to which any Environmental Law requires that a notice be given to persons entering or occupying the Premises, or the Property, or neighboring properties. Notwithstanding the foregoing, subject to the provision of Paragraph 2(e) (including the requirement that Lessee shall obtain a Haz Mat CUP from the City before Lessee maintains on the Premises five (5) gallons or more of any Hazardous Materials) Lessee may use the Hazardous Materials on the Premises that are listed on Exhibit "E" attached hereto and incorporated by reference herein, and any ordinary and customary office supplies, cleaning materials, and other materials reasonably required to be used in the normal course of Lessee's agreed use of the Premises, so long as any such use is in compliance with all Environmental Laws, and does not expose the Premises, the Property, or neighboring property to any meaningful risk of contamination or damage. In addition, Lessor may condition its consent to any Reportable Use upon receiving such additional assurances as Lessor reasonably deems necessary to protect itself, the public, the Premises and the Property, and/or the environment against damage, contamination, injury and/or liability, including, but not limited to, the installation (and removal on or before Lease expiration or termination) of any protective modifications installed by Lessee (such as concrete encasements). Lessor shall be entitled to request a copy of Lessee's Hazardous Materials Business Plan at any time during the Lease Term and Lessee shall provide such Plan to Lessor within five (5) business of such request.

(c)"**Environmental Laws**" shall mean and include any Federal, State, or local statute, law, ordinance, code, rule, regulation, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, element, compound, mixture or material, as now or at any time hereafter in effect including, without limitation, California Health and Safety Code §§25100 et seq., §§25300 et seq., Sections 25281(f) and 25501 of the California Health and Safety Code, Section 13050 of the Water Code, the Federal Comprehensive Environmental Response, Compensation and Liability Act, as amended, 42 U.S.C. §§9601 et seq. ("CERCLA"), the Superfund Amendments and Reauthorization Act, 42 U.S.C. §§9601 et seq., the Federal Toxic Substances Control Act, 15 U.S.C. §§2601 et seq., the Federal Resource Conservation and Recovery Act as amended, 42 U.S.C. §§6901 et seq., the Federal Hazardous Material Transportation Act, 49 U.S.C. §§1801 et seq., the Federal Clean Air Act, 42 U.S.C. §7401 et seq., the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq., the River and Harbors Act of 1899, 33 U.S.C. §§401 et seq., and all rules and regulations of the EPA, the California Environmental Protection Agency, or any other state or federal department, board or any other agency or governmental board or entity having jurisdiction over the environment, as any of the foregoing have been, or are hereafter amended.

(d)If Lessee knows, or has reasonable cause to believe, that Hazardous Materials have come to be located in, on, under or about the Premises or the Property, other than as previously consented to by Lessor or otherwise permitted under this Lease, Lessee shall promptly give written notice of such fact to Lessor and provide Lessor with a copy of any report, notice, claim or other documentation which it has concerning the presence of such Hazardous Materials.

(e)Lessee and Lessee's agents, employees, and contractors shall not cause any Hazardous Materials to be discharged or released into the Building or into the plumbing or sewage system of the Building or into or onto the Land underlying or adjacent to the Building in violation of any Environmental Laws. Lessee shall promptly, at Lessee's expense, take all investigatory and/or remedial action reasonably recommended, whether or not formally ordered or required, for the cleanup of any contamination in violation of Environmental Laws or the terms of this Lease caused by Lessee or caused by any of Lessee's employees, agents, or contractors, and for the maintenance, security and/or monitoring of the Premises, the Property, or neighboring properties if such contamination is caused by a release or emission of any Hazardous Materials by Lessee or by any of Lessee's employees, agents, or contractors.

(f)Subject to Section 14 of the Work Letter, Lessee shall indemnify, defend and hold Lessor and its agents, employees, and lenders and the Premises and the Property harmless from any and all claims, damages, fines, judgments, penalties, costs, liabilities or losses (including, without limitation, any and all sums paid for settlement of claims, attorneys' fees, consultant and expert fees) arising during or after the term of this Lease out of or involving any Hazardous Materials brought on to the Premises, the Property, or Menlo Business Park by or for Lessee or by anyone under Lessee's control in violation of Environmental Laws or the terms of this Lease. Lessee's obligations under this Paragraph 10(f) shall include, but not be limited to, the effects of any contamination or injury to person, property or the environment created or

suffered by Lessee, and the cost of investigation (including consultants' and attorneys' fees and testing), removal, remediation, restoration and/or abatement thereof, or of any contamination therein involved, as required by Environmental Laws, and shall survive the expiration or earlier termination of this Lease. No termination, cancellation or release agreement entered into by Lessor and Lessee shall release Lessee from its obligations under this Lease with respect to Hazardous Materials, unless specifically so agreed by Lessor in writing at the time of such agreement.

(g)Lessor represents and warrants to Lessee that prior to the execution of this Lease, Lessor delivered to Lessee the most recent Phase I environmental report, dated December 2014, (the "**Phase 1 Report**") on the Building. To Lessor's actual knowledge, except as otherwise provided in the Phase 1 Report, Lessor represents and warrants to Lessee that no Hazardous Materials currently exist in, on or under any portion of the Premises in violation of applicable environmental law. For purposes of this Paragraph 10(g), "Lessor's actual knowledge" shall mean the current actual knowledge of John C. Tarlton, President of Tarlton Properties, Inc., without any duty to make investigation or inquiry.

11.Taxes on Lessee's Property. Lessee shall pay before delinquency any and all taxes, assessments, license fees, and public charges levied, assessed, or imposed and which become payable during the Term and any extension thereof upon Lessee's equipment, fixtures, furniture, and personal property installed or located in the Premises or on the Property.

12.Insurance.

(a)Lessee shall, at Lessee's sole cost and expense, provide and keep in force commencing with the Commencement Date of the Term and continuing during the Term, (i) a commercial general liability insurance policy with a recognized casualty insurance company qualified to do business in California, insuring against liability occasioned by any occurrence in, on, about, or related to the Premises, or arising out of the condition, use, occupancy, alteration or maintenance of the Premises and covering the contractual liability referred to in Paragraph 13(a) of this Lease, having a combined single limit for both bodily injury and property damage in an amount not less than One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) annual aggregate, and with excess umbrella liability insurance of not less than Six Million Dollars ($6,000,000.00) (limits requirement may be met through a combination of primary and excess/umbrella liability policies); (ii) an "all risk" or "Special Cause of Loss" property policy on all of its equipment, trade fixtures, inventory, fixtures, and personal property in, on or about the Premises including but not limited to Lessee's Property described in Exhibit "G" and all alterations made by Lessee or Lessor following the Commencement Date hereof within the Premises in an amount not less than one hundred percent (100%) of the full replacement cost valuation; (iii) workers' compensation insurance, as required by law and employers' liability insurance with a limit of not less than One Million Dollars ($1,000,000.00) per accident and per disease with a One Million Dollar ($1,000,000.00) disease limit each employee, (iv) boiler and machinery insurance; (v) business interruption insurance in such amounts as will reimburse Lessee for direct and indirect loss of earnings and incurred costs attributable to the perils commonly covered by Lessee's property insurance described above but in no less than One Million Dollars ($1,000,000), and (vi) such other types and amounts of

insurance as Lessor or its lender may reasonably require which are customarily required of comparable tenants of comparable buildings in the vicinity of the Building; provided, however, the Lessor's right to require new or additional coverage or increase policy limits under this clause (vi) shall not be exercised more than three (3) times in total during the initial 132 month Term of the Lease. All such insurance carried by Lessee shall be in a form reasonably satisfactory to Lessor and its mortgage lender and shall be carried with companies that have a general policyholder's rating of not less than "A" and a financial rating of not less than Class "X" in the most current edition of Best's Insurance Reports or such similar rating as may be reasonably selected by Lessor. Lessee shall endeavor in good faith to cause its commercial general liability policy to provide that the insurer shall endeavor give Lessor thirty (30) days prior written notice of any cancellation. Lessee shall not reduce any of its insurance coverages required in (i) through (vi) above below the minimum amount(s) required by this Lease or cancel such insurance except after at least thirty (30) days' prior written notice to Lessor by Lessee, provided however, that if such notice is first received from Lessee's commercial general liability carrier as requested above, Lessee need not provide a second notice of the same cancellation. On or before the earlier to occur of (i) the date on which any Lessee party first enters the Premises for any reason, including, without limitation prior to the Early Entry, or (ii) the Commencement Date and upon renewal of such policies not less than five (5) days prior to the expiration of the term of such coverage, Lessee shall deliver to Lessor certificates of insurance confirming such coverage and that all insurance requirements set forth herein have been met. Notwithstanding the preceding, if Lessee does not provide a certificate evidencing renewal at least five (5) days in advance of the expiration date of the term of any insurance coverage, Lessor will agree to accept such a certificate from Lessee's insurance carrier within five (5) days following the expiration of the term and renewal of the policy; provided that Lessee first obtains, not less than ten (10) days prior to the expiration of the term of such coverage, from its insurance broker, a letter addressed to Lessor certifying to Lessor that Lessee intends to renew such coverage and is taking such action as are reasonably necessary to renew its policy(ies) in question prior to the expiration of any such coverage. To the fullest extent permitted by law, the commercial general liability and property insurance policies required to be carried by Lessee hereunder shall include Menlo Park Portfolio II, LLC and Tarlton Properties, Inc. as "Additional Insured", c/o Tarlton Properties, Inc., 1530 O'Brien Drive, Suite C, Menlo Park, CA 94025, and such other persons as Lessor may reasonably request from time to time as additional insureds with respect to liability arising out of this Lease or the operations of Lessee by ISO form is CG 2011 01 96 or its equivalent (collectively, "**Additional Insureds**") or as loss payee, as applicable. Such insurance shall provide primary coverage without contribution from any other insurance carried by or for the benefit of Lessor, Lessor's property manager, or other Additional Insured and Lessor's insurance shall be in excess thereto. In no event shall the limits of such insurance be considered as limiting the liability of Lessee under this Lease. If Lessee fails to procure and maintain the insurance required hereunder, Lessor may, but shall not be required to, order such insurance at Lessee's expense and Lessee shall reimburse Lessor for all costs incurred by Lessor with respect thereto. Lessee's reimbursement to Lessor for such amounts shall be deemed Additional Rent, and shall include all sums disbursed, incurred or deposited by Lessor, including Lessor's costs, expenses and reasonable attorneys' fees with interest thereon at the Interest Rate.

(b)Lessor shall obtain and carry in Lessor's name, as insured, as an Operating Expense of the Property as provided in Paragraph 6(b), during the Term, "all risk" property

insurance coverage (with rental loss insurance coverage for a period of one year), flood insurance, public liability and property damage insurance, and Lessor may obtain and carry insurance against such other risks or casualties as Lessor shall reasonably determine, including, but not limited to, insurance coverages required of Lessor by the beneficiary of any deed of trust which encumbers the Property, including earthquake insurance coverage insuring Lessor's interest in the Property in amounts deemed reasonable by Lessor or its lender from time to time. The proceeds of any such insurance shall be payable solely to Lessor, and Lessee shall have no right or interest therein. Lessor shall have no obligation to insure against loss by Lessee to Lessee's equipment, fixtures, furniture, inventory, or other personal property of Lessee in or about the Premises occurring from any cause whatsoever. Lessor agrees that its property insurance deductible shall at all times be reasonable and not exceed those of prudent landlords, comparable in size to Lessor, and for comparable buildings in the Bay Area of California.

(c)Notwithstanding anything to the contrary contained in this Lease, the parties release each other, and their respective authorized representatives, employees, officers, directors, shareholders, managers, members, trustees, beneficiaries, assignees, subtenants, invitees, successors, agents, contractors and property managers, from any claims for damage to the Premises or the Property and to the fixtures, personal property, leasehold improvements and alterations of either Lessor or Lessee in or on the Premises or the Property, to the extent that are caused by or result from risks required by this Lease to be insured against or actually insured against under any property insurance policies carried by the parties and in force at the time of any such damage, whichever is greater. This waiver applies whether or not the loss is due to the negligence (sole, separate or otherwise) of Lessor or Lessee or their respective authorized representatives, employees, officers, directors, shareholders, managers, members, trustees, beneficiaries, assignees, subtenants, invitees, successors, agents, contractors and property managers. Subject to the foregoing, this release and waiver shall be complete and total even if such loss or damage may have been caused by the negligence of the other party, its managers, members, employees, agents, contractors, property managers or invitees. Lessee covenants that the insurance policies required to be maintained by Lessee under this Lease will contain waiver of subrogation endorsements. All of Lessor's and Lessee's repair and indemnity obligations under this Lease shall be subject to the waiver contained in this Paragraph 12(c) excepting any repairs necessitated by the acts or omissions of Lessee, its employees, agents, contractors, sublessees, assigns or invitees if the cost of such repair does not exceed Lessor's property coverage deductible; then, in such case, Lessee shall remain liable for either the repair or the cost thereof as provided in Paragraph 15(c). This release and waiver of subrogation does not and shall not apply to any damage to persons or property resulting from any environmental liability of Lessee pursuant to Paragraph 10.

13.Indemnification.

(a)Subject to the waiver of subrogation set forth in Paragraph 12(c) and to Section 14 of the Work Letter, Lessee shall indemnify, defend, and hold harmless Lessor from claims, suits, actions, or liabilities for personal injury, death or for loss or damage to property that arise from (1) any activity, work or thing done by Lessee in the Premises, the Property or the Park or permitted by Lessee in the Premises or on the rooftop equipment pad or on the equipment pads or in the bunkers immediately adjacent to the Premises, to the extent access to

such pads and bunkers are controlled by Lessee to the same extent Lessee controls access to the Premises, (2) bodily injury or damage to property which arises in or about the Property or the Park to the extent the injury or damage to property results from the actual or alleged acts, omissions or willful misconduct of Lessee, its employees, agents or contractors, and (3) based on any event of default by Lessee in the performance of any obligation on Lessee's part to be performed under this Lease. Lessee also waives all claims against Lessor and its employees, agents and contractors for damages to property, or to goods, wares, and merchandise stored in, upon, or about the Premises or the Property, and for injuries to persons in, upon, or about the Premises or the Property from any cause arising at any time, except to the extent caused by the active negligence or willful misconduct by Lessor or its employees, agents or contractors.

(b)Subject to the waiver of subrogation set forth in Paragraph 12(c), Lessor shall indemnify, defend, and hold harmless Lessee from claims, suits, actions, or liabilities for personal injury, death or for loss or damage to property that arise from bodily injury or damage to property which arises in or about the Property to the extent the injury or damage to property results from the active negligent acts or willful misconduct of Lessor, its employees, agents or contractors. As used herein, "active negligence" of any party shall mean that party's participation in an affirmative act of negligence, knowledge about or compliance in a negligent act, or failure to perform (after a reasonable period of time) a precise duty which that party is obligated to perform hereunder.

(c)In the absence of comparative or concurrent negligence on the part of Lessee or Lessor, their respective agents, affiliates, and subsidiaries, or their respective officers, directors, members, employees or contractors, the foregoing indemnities by Lessee and Lessor shall also include reasonable costs, expenses and attorneys' fees incurred in connection with any indemnified claim or incurred by the indemnitee in successfully establishing the right to indemnity. The indemnitor shall have the right to assume the defense of any claim subject to the foregoing indemnities with counsel reasonably satisfactory to the indemnitee. The indemnitee agrees to cooperate fully with the indemnitor and its counsel in any matter where the indemnitor elects to defend, provided the indemnitor shall promptly reimburse the indemnitee for reasonable costs and expenses incurred in connection with its duty to cooperate.

The foregoing indemnities shall survive the expiration or earlier termination of this Lease and are conditioned upon the indemnitee providing prompt notice to the indemnitor of any claim or occurrence that is likely to give rise to a claim, suit, action or liability that will fall within the scope of the foregoing indemnities, along with sufficient details that will enable the indemnitor to make a reasonable investigation of the claim.

When the claim is caused by the joint negligence or willful misconduct of Lessee and Lessor or by the indemnitor party and a third party unrelated to the indemnitor party (except indemnitor's agents, officers, employees or invitees), the indemnitor's duty to indemnify and defend shall be proportionate to the indemnitor's allocable share of joint negligence or willful misconduct.

(d)Lessor shall not be liable to Lessee for any damage caused by any act or negligence of any other occupant of the Building or any other owner or occupant of adjoining or

contiguous property, nor for overflow, breakage, or leakage of water, steam, gas, or electricity from pipes, wires, or otherwise in the Premises or the Building, except to the extent caused by the gross negligence or willful misconduct by Lessor or Lessor's employees, agents, or contractors. Except as otherwise provided herein, Lessee will pay for damage to the Premises or the Property caused by the misuse or neglect of the Premises or the Property by Lessee or its employees, agents, contractors, assigns or subtenants, including but not limited to, the breakage of glass in the Building.

14. Warm Shell Work; Market Ready Improvements; Tenant Improvements.

(a) Lessor shall cause to be constructed the improvements and modifications to the Premises and the Building (i) described in Schedule "F-1" and Schedule "F-2" to the Work Letter attached hereto (the "**Warm Shell Work**"), (ii) as described in Schedule "F-3" and Schedule "F-4" to the Work Letter (the "**Market Ready Improvements**") and (the "**Tenant Improvements**"). The Warm Shell Work, the Market Ready Improvements and the Tenant Improvements are collectively referred to herein as the "**Work**"). The costs of the Warm Shell Work shall be paid for by Lessor. The cost of BMR fees assessed by the City of Menlo Park associated with the Work (but not any alterations or improvements made by Lessee after the Commencement Date) shall be paid for by Lessor. The costs of the Market Ready Improvements and the Tenant Improvements shall be shared by Lessor and Lessee as set forth herein and in the Work Letter. Lessor agrees to pay the costs (y) to complete the Market Ready Improvements up to the total amount of Nine Million Nine Hundred Thousand Dollars ($9,900,000.00) which amount equates to Fifty-Five Dollars ($55.00) per rentable square foot of the Premises ("**Lessor's Contribution**"), and (z) to complete the Tenant Improvements up to a total amount of Two Million Seven Hundred Thousand ($2,700,000.00) (the "**Tenant Improvement Allowance**"); provided, that any amounts remaining in each allowance can be used for either category of work. Lessor shall disburse Lessor's Contribution and the Tenant Improvement Allowance, as applicable, directly to the applicable design professionals, contractors, materialmen or other laborers in connection with the construction of the Market Ready Improvements and the Tenant Improvements. At Lessee's election made by written notice to Lessor at any time prior to Lessor's execution of the Construction Contract (as defined in the Work Letter), Lessee may re-allocate the dollar amounts attributable to a particular line item in the budget for the Warm Shell Work as set forth on Schedule "F-2" to the Work Letter attached hereto, for use of such amounts towards the completion of a similar line item of work in the budget for the Market Ready Improvements and Tenant Improvements as set forth on Schedule "F-4" to the Work Letter attached hereto; provided, however, that Lessee shall not be permitted to exercise such re-allocation rights with respect to any structural portions of the Work or for any portion of the Work that is related to the exterior of the Building. If Lessee elects to re-allocate any dollar amounts from the Warm Shell Work as set forth in the immediately preceding sentence, then the parties hereby agree and acknowledge that thereafter Lessor shall have no obligation to complete such item of the Warm Shell Work attributable to the funds re-allocated by Lessee and the definition of the Warm Shell Work shall be deemed so amended and Lessor's Contribution shall be increased by such re-allocated amount. Except as otherwise provided herein or in the Work Letter, Lessee shall be liable for all fees and costs of the design and construction of the Market Ready Improvements and the Tenant Improvements in excess of the Lessor's Contribution and the Tenant Improvement Allowance (such amount referred to herein

as the "**Tenant Improvement Shortfall**"). Lessee shall pay the Tenant Improvement Shortfall upon written request from Lessor accompanied by invoices reflecting such amounts due within thirty (30) days following Lessor's delivery of such payment request as more particularly described in the Work Letter. The Tenant Improvement Shortfall shall be invoiced and paid monthly as the construction costs are incurred during construction in proportion to the amount of Landlord's Contribution and the Tenant Improvement Allowance combined fall short of the Final Budget cost. By way of example only, if the total project costs are budgeted to be Twenty Million Dollars ($20,000,000.00), Lessee's Tenant Improvement Shortfall percentage would be thirty seven percent (37%) and Lessee would be invoiced thirty-seven percent (37%) of the actual construction costs each month commencing with the first invoices following Lessor's completion of the Warm Shell Work. Following completion of the Work and final determination of the cost of the Work and the Tenant Improvement Shortfall, the parties shall review and reconcile any underpayments or overpayments by Lessee of the Tenant Improvement Shortfall. Lessor shall employ Tarlton Properties, Inc. as construction manager for the Tenant Improvements at a fee (the "**Lessor Supervision Fee**") equal to four percent (4%) of hard construction costs of the Market Ready Improvements and the Tenant Improvements (i.e., the amounts paid to any general contractor, subcontractors, vendors, and suppliers for labor and materials for the construction of the Market Ready Improvements and the Tenant Improvements). The Work shall be constructed on an "open book" basis and Lessee shall have the right to reasonably audit and inspect all relevant costs, books and records related to the Work in Lessor's office during normal business hours upon not less than forty-eight hours' advance written notice to Lessor. Lessee must complete its final audit and review within thirty (30) days of Lessor's payment of final invoices for the Work.

(b)The Work shall be constructed in accordance with all Applicable Laws and the terms of this Lease, in a good and workmanlike manner and using new materials and equipment of good quality. Upon delivery of the Premises to Lessee, Lessor and Lessee shall coordinate a walk-through of the Premises and Lessor and Lessee shall complete a punch list indicating any deficiencies in the Work ("**Punch List**"). Lessor shall cause such items set forth in the Punch List to be completed within a reasonable period of time thereafter as may be required for compliance with Schedules "F-1" and "F-2", and the Work Letter. Lessor agrees to (i) use reasonable efforts to assign any assignable warranties or guaranties provided by the contractors or manufacturers of equipment to be maintained by Lessee pursuant to Paragraph 15 (if any) provided as part of the Work to Lessee or, at Lessee's option, to enforce same with respect to any defect discovered in such equipment within one (1) year after the Commencement Date and (ii) to enforce all other warranties or guaranties with respect to any defect discovered in the Work within one (1) year after the Commencement Date.

(c)Lessee waives all right to make repairs at the expense of Lessor, or to deduct the costs thereof from the Rent, and Lessee waives all rights under Section 1941 and 1942 of the Civil Code of the State of California. At the expiration or sooner termination of this Lease, Lessee shall surrender the Premises in accordance with Paragraph 15, except for ordinary wear and tear, damage caused by casualty, and alterations or other improvements made by Lessee with Lessor's prior written consent which Lessee is not required to remove.

(d)Lessee shall have no responsibility for and neither Lessor's Contribution nor the Tenant Improvement Allowance shall be used for the following: (a) costs for improvements which are not shown on or described in the Tenant Improvement Documents unless otherwise approved by Lessee in a Change Order (except for Lessee's obligation to share any fire-proofing costs, if required); (b) costs to complete the Warm Shell Work; (c) costs incurred due to the presence of Hazardous Materials in the Premises, the Property or the surrounding area present as of the Effective Date; (d) attorneys' fees incurred in connection with negotiation of construction contracts, and attorneys' fees, experts' fees and other costs in connection with disputes with third parties; (e) interest and other costs of financing construction costs; (f) costs recovered by Lessor upon account of warranties and insurance; (g) restoration costs in excess of insurance proceeds as a consequence of casualties; (h) provided Lessee promptly pays its Tenant Improvement Shortfall as and when invoiced, and for any increases in costs resulting from Tenant Delays or Change Orders, penalties and late charges attributable to Lessor's failure to pay construction costs for which Lessor is responsible hereunder (not including any costs associated with construction, installation or equipment directly contracted for by Lessee); (i) costs incurred as a consequence of Lessor Delay, (j) any fees or general conditions of the General Contractor (defined in the Work Letter) in excess of:

(1) Division 1 (including: supervision and general conditions and other overhead) by percentage: 5.04%

(2) Contractor's fee by percentage: 3.75%

or (k) any third party fees, costs, overhead, management or supervision fees of Lessor or its affiliates other than the Lessor Supervision Fee. Lessor agrees to use commercially reasonable efforts to enforce the terms of the Lessor's construction contracts during the course of construction.

(e)Lessor and Lessee have agreed that Lessor shall pay for fifty percent of the cost of fire-proofing, if any, required in the Premises, as part of the Warm Shell Work, and, Lessor shall pay for the remaining fifty percent (50%) of such fireproofing cost from the Lessor's Contribution for Market Ready Improvements.

15.Maintenance and Repairs; Alterations; Surrender and Restoration.

(a)Lessor shall, at Lessor's sole expense, keep in good order, condition, and repair and replace when necessary, the structural elements of the roof (excluding the roof membrane which Lessor shall maintain, but the cost of which shall be included as an Operating Expense as permitted under Paragraph 6), the structural elements of the foundation and exterior walls (except the interior faces thereof) of the Building, and other structural elements of the Building and the Property as "structural elements" are defined in building codes applicable to the Building, excluding any alterations, structural or otherwise, made by Lessee to the Building which are not approved in writing by Lessor prior to the construction or installation thereof by Lessee. Subject to any termination right in Paragraph 21, below, Lessor shall perform and construct, and Lessee shall not be responsible for performing or constructing, any repairs, maintenance, or improvements (1) required as a result of any casualty damage except to the extent caused by Lessee, its employees, agents, contractors, assigns, sublessee or invitees up to

the amount of Lessor's deductible, which shall be subject to Paragraph 21 below, or as a result of any taking pursuant to the exercise of the power of eminent domain, or (2) for which Lessor has a right of reimbursement from third parties based on construction or other warranties, contractor guarantees, or insurance claims.

(b)Lessor shall provide or cause to be provided and shall supervise the performance of, as an Operating Expense of the Property as permitted under Paragraph 6(b) hereof, all services and work relating to the operation, maintenance, repair, and replacement, as needed, of the Property, HVAC, mechanical, electrical and plumbing systems in the Building; the interior of the Building; the roof membrane; the outside areas of the Property; landscaping, tree trimming, resurfacing and restriping of the parking lot, repairing and maintaining the walkways; exterior building painting, exterior building lighting, parking lot lighting, and exterior security patrol. In the event Lessee provides Lessor with written notice of the need for any repairs, Lessor shall commence any such repairs promptly following receipt by Lessor of such notice and Lessor shall diligently prosecute such repairs to completion. Lessor shall make available during normal business hours for Lessee's review and copy, Lessor's service, maintenance, repair and replacement records, such records to be located at the office of Lessor in the Menlo Business Park.

Notwithstanding the preceding, subject to Lessee's satisfactory performance of the obligations described herein below in Lessor's sole but reasonable discretion and subject to the conditions provided in Paragraph 15(c), below, so long as (x) Pacific Biosciences of California, Inc. or any Permitted Transferee (provided that in the case of a Permitted Transferee, the senior personnel in charge of the Systems Repairs (as defined below) shall remain the same before and after the Permitted Transferee becomes the named entity under the Lease) remains the named tenant entity under this Lease, (y) occupies and operates its business in not less than 51% of the Premises, and (z) if any sublease exists, so long as Pacific Biosciences of California, Inc. remains one hundred percent (100%) responsible for all service, maintenance, repair and replacement of the systems set forth in Paragraph 15(b)(i) and (ii), below, for the entirety of the Premises whether subleased or not, (the items set forth in Subsections (x), (y) and (z) collectively referred to herein as the "**Maintenance Requirements**"), the parties agree that Lessee shall directly assume responsibility for, contract directly with any service providers for, and pay directly for the following (the "**Systems Repairs**"):

(i) all service, maintenance, repair and replacement of heating, ventilation, air conditioning, mechanical and electrical systems within the Premises or serving the Premises from the rooftop pad or the equipment pads immediately adjacent to the Premises; and,

(ii) all service, maintenance, repair and replacement of plumbing and interior sewage systems within the Premises.

Further notwithstanding Lessee's assumption of responsibility under Paragraph 15(b)(i) and (ii), above, Lessor, and not Lessee, shall throughout the Term of the Lease, maintain all fire systems including the wet system (including the P.I.V.) and the fire alarm monitoring system, the electrical incoming switch gear (including the main switch gear), the Building

envelope, all back flow systems and the elevator. All such costs shall be included in Operating Expenses, subject to the provisions of Paragraph 6.

Lessee's right to perform such service, maintenance, repair and replacement as provided in Paragraph 15(b)(i) and (ii) is non-transferable as more particularly described below.

(c)Subject to the foregoing and except as provided elsewhere in this Lease, Lessee shall at all times use and occupy the Premises and maintain the systems described in Paragraph 15(b)(i) and (ii), above, in a manner which keeps the Premises in good and safe order, condition, and repair, including the performance of all regularly scheduled service as required by any manufacturer's recommended service plan and/or required for the maintenance of any warranty provided by such manufacturer. Lessor may, at Lessor's reasonable discretion, obtain on an annual basis an inspection report of the HVAC system from a separate HVAC service firm designated by Lessor for the purpose of monitoring the performance of the HVAC maintenance and repair work performed by the HVAC service firm which performs the regular repair and maintenance. The cost of such inspection report shall be an Operating Expense pursuant to Paragraph 6. Subject to the release of claims and waiver of subrogation contained in Paragraphs 12(c) and 13(d), if Lessor is required to make any repairs to the Property by reason of Lessee's negligent acts or omissions, Lessor may add the cost of such repairs to the next installment of Rent which shall thereafter become due, and Lessee shall promptly pay the same upon receipt of an invoice therefor.

If at any time after the first (1st) anniversary of the Commencement Date, Pacific Biosciences of California, Inc. (the named tenant hereunder) (i) assigns this Lease by operation of law or otherwise other than to a Permitted Transferee, (ii) fails to provide copies of all service contracts and all service, maintenance, repair and replacement records (whether performed by Lessee's trained and certified personnel or by outside vendors) with respect to Systems Repairs required to be performed by Lessee in the Premises to Lessor on a timely basis, without necessity of request therefor, (iii) fails to require that all vendors maintain insurance reasonably satisfactory to Lessor naming Lessor and the Additional Insureds named in Paragraph 12 as "Additional Insured", (iv) fails to perform the Systems Repairs in accordance with the provisions of this Paragraph 15, (v) fails to provide such service, maintenance, repair or replacement at quality and frequency levels at least equal to the quality and frequency levels Lessor would maintain if it were providing such services (as evidenced by Lessor's maintenance of the balance of the Menlo Business Park), or (vi) fails to satisfy any of the Maintenance Requirements, and following such breach Lessee fails to commence a cure of any breach of the obligations set forth in (ii), (iii), (iv), (v) or (vi) within five (5) business days after receipt of written notice from Lessor and, thereafter, to diligently prosecute the cure to completion three (3) or more times in a twelve (12) month period then, the Parties agree that Lessor may, in its discretion, elect to assume or resume responsibility for maintenance, repair and replacement of the systems described in Paragraph 15(b)(i) and (ii), above, and include the cost in Operating Expenses as provided in Paragraph 6, subject to the provisions of Paragraph 6. Notwithstanding the cure period set forth in the immediately preceding sentence, the parties hereby agree and acknowledge that if Lessee fails more than once in a twelve (12) month period to cure a breach of any of the obligations set forth in (ii), (iii), (iv), (v) or (vi) within a reasonable time after receipt of written notice from Lessor, then Lessor may elect to assume or resume responsibility for maintenance,

repair and replacement of the systems as set forth herein. Any such election by Lessor shall be effective immediately upon written notice to the Lessee of Lessor's intent to assume or resume such service, maintenance, repair and replacement. Any Lessor notice referred to above must set forth in reasonable detail the nature and extent of the failure referencing pertinent Lease provisions.

All vendors selected by Lessee in the performance of its service, maintenance and repair obligations hereunder shall be from Lessor's approved vendor list. Lessee agrees to provide Lessor with a copy of Lessee's internal maintenance programs and procedures within ten (10) days of the Commencement Date hereof, and again at any time upon receipt of Lessor's request therefor. Lessor and Lessee shall schedule a joint inspection of the Premises not less than once per calendar year for the purpose of verifying that all service, repairs, maintenance and replacements performed by Lessee hereunder are being performed in a reasonable and satisfactory manner.

(d)Lessee shall not install or construct any alterations, improvements or additions without the prior written consent of Lessor, which consent shall not be unreasonably withheld, conditioned or delayed. Notwithstanding the foregoing, Lessee may, from time to time, at its own cost and expense and without the consent of Lessor (but with advance notice to Lessor) make nonstructural alterations to the interior of the Premises provided that: (i) such alterations do not affect or penetrate the structural portions of the Premises or the Building, the roof or exterior appearance of the Premises or Building or materially and adversely affects any mechanical, electrical, plumbing, sewer, life safety, HVAC or other system in the Building; (ii) such alterations do not require a building permit or other governmental authorization; (iii) the cost of which in any one instance or in any one calendar year is Thirty Thousand and 00/100 Dollars ($30,000.00) or less, further provided Lessee (1) first notifies Lessor in writing of any such alterations at least fifteen (15) days prior to commencing any such work; and (2) such alterations otherwise comply with the terms of this Paragraph 15 and all Rules and Regulation, Building regulations and Lessor's engineering and design requirements for the Building, as applicable (such alterations hereinafter ("**Permitted Alterations**"). Except for Permitted Alterations, Lessee shall not make any additional alterations, improvements, or additions to the Premises without delivering to Lessor a complete set of plans and specifications for such work, obtaining and delivering copies to Lessor of all permits or other governmental approvals required for such work and obtaining Lessor's prior written consent thereto, which consent shall not be unreasonably delayed, conditioned or withheld. All alterations and additions shall be installed by Lessee's employees or by a licensed contractor approved by Lessor, at Lessee's sole expense in compliance with all Applicable Laws, rules, regulations and ordinances. Lessee shall keep the Premises and the Property on which the Premises are situated free from any liens arising out of any work performed, materials furnished or obligations incurred by or on behalf of Lessee. If any Permitted Alterations or other non-structural alterations to the interior of the Premises exceed Thirty Thousand and 00/100 Dollars ($30,000.00) in any one instance or in any calendar year, Lessee shall employ, at Lessee's expense, Tarlton Properties, Inc. as construction manager for such alterations at a fee equal to five percent (5%) of the first Two Hundred Fifty Thousand Dollars ($250,000.00) of hard construction costs (i.e., the amounts paid to any general contractor, subcontractors, vendors, and suppliers for labor and materials for the construction of the alterations or improvements) and then four percent (4%) of such hard construction costs in

excess of Two Hundred Fifty Thousand Dollars ($250,000.00). Lessor may condition its consent to, among other things, Lessee agreeing in writing to remove any such alterations prior to the expiration of the Lease Term and Lessee agreeing to restore the Premises to its condition prior to such alterations at Lessee's expense. For alterations requiring Lessor's consent, Lessor shall have no right to require Lessee to remove alterations unless Lessor shall advise Lessee in writing at the time consent is granted whether Lessor will require Lessee to remove any alterations from the Premises prior to the expiration or sooner termination of this Lease. Lessee agrees that Lessor may obtain updated architectural drawings, in each and every instance of an alteration to the Building performed by or on behalf of Lessee, and Lessee agrees to reimburse Lessor for the cost to update architectural plans and drawings within thirty (30) days of receipt of invoice therefor.

Lessor and Lessee shall schedule a joint inspection of the Premises not less than once per calendar year for the purpose of verifying that all alterations made by Lessee within the Premises are in fact Permitted Alterations and have been performed in accordance with the requirements provided above. Notwithstanding anything to the contrary contained herein, if Lessee performs alterations in the Premises which required Lessor's advance written consent when none was obtained, which required a building permit or other governmental authorization when none was obtained or otherwise failed to comply with the requirements of this Paragraph 15(d), then Lessor may revoke Lessee's right to perform Permitted Alterations without first obtaining Lessor's prior written consent, in each instance, which consent shall not be unreasonably withheld, conditioned or delayed.

All alterations, trade fixtures, equipment and personal property installed in the Premises solely at Lessee's expense, including, without limitation, the items described on Exhibit "G" attached hereto, ("**Lessee's Property**") shall during the term of this Lease remain Lessee's property and Lessee shall be entitled to all depreciation, amortization and other tax benefits with respect thereto (as to the cost of the Work paid for by Lessee). Upon the expiration or sooner termination of this Lease, all alterations, fixtures and improvements to the Premises, whether made by Lessor or installed by Lessee at Lessee's expense, shall be surrendered by Lessee with the Premises and shall become the property of Lessor; provided, however, that Lessee's Property may be removed by Lessee. Lessee shall repair to Lessor's reasonable satisfaction all damage to the Premises occasioned by removal of Lessee's Property.

(e)Lessee shall, at Lessee's sole cost and expense, fully, diligently and in a timely manner, comply with all present and future "**Applicable Laws**," which term is used in this Lease to mean all laws, rules, regulations, ordinances, directives, orders, covenants, permits of all governmental agencies and authorities, easements and restrictions of record, the requirements of any applicable fire insurance underwriter or rating bureau or board of fire underwriters relating in any manner to the Premises and/or with respect to Lessee's use or occupancy of the Premises (including but not limited to matters pertaining to industrial hygiene, environmental conditions on, in, under or about the Premises, including soil and groundwater conditions, subject to the provisions of Paragraph 10 hereof, and the use, generation, manufacture, production, installation, maintenance, removal, transportation, storage, spill, or release of any Hazardous Materials (which are addressed in Paragraph 10 hereof)), now in effect or which may hereafter come into effect. Lessee shall, within five (5) days after receipt of

Lessor's written request, provide Lessor with copies of all documents and information, including but not limited to permits, registrations, manifests, applications, reports and certificates, evidencing Lessee's compliance with any Applicable Laws specified by Lessor, and shall immediately upon receipt, notify Lessor in writing (with copies of any documents involved) of any threatened or actual claim, notice, citation, warning, complaint or report pertaining to or involving failure by Lessee or the Premises to comply with any Applicable Laws. Notwithstanding the foregoing, any changes or repairs to the Property of any nature which would be considered a capital expenditure under generally accepted accounting principles to the Premises shall be made by Lessor at Lessee's expense if such repairs or changes are required by reason of the specific nature of the use of the Premises by Lessee. If such changes or repairs are not required by reason of the specific nature of Lessee's use of the Premises and are capital expenditures, the cost of such changes or repairs shall be treated as an Operating Expense and amortized in accordance with the provisions of Paragraph 6(b).

(f)Subject to Paragraph 32, Lessor, Lessor's agents, employees, contractors and designated representatives, and the holders of any mortgages, deeds of trust or ground leases on the Premises ("**Lenders**") shall have the right to enter the Premises at any time in the case of an emergency, and otherwise at reasonable times on not less than twenty-four (24) hours' notice, for the purpose of inspecting the condition of the Premises and for verifying compliance by Lessee with this Lease and all Applicable Laws, and Lessor shall be entitled to employ experts and/or consultants in connection therewith to advise Lessor with respect to Lessee's activities, including but not limited to Lessee's installation, operation, use, monitoring, maintenance, or removal of any Hazardous Substance on or from the Premises. The costs and expenses of any such inspections shall be paid by the party requesting same, unless a default or breach of this Lease by Lessee or a violation of Applicable Laws or a contamination, caused or materially contributed to by Lessee, is found to exist or to be imminent, or unless the inspection is requested or ordered by a governmental authority as the result of any such existing or imminent violation or contamination. In such case, Lessee shall upon request reimburse Lessor or Lessor's Lender, as the case may be, for the costs and expenses of such inspections.

(g)During the term of this Lease, Lessee shall comply, at Lessee's expense, with all of the covenants, conditions, and restrictions affecting the Premises which are recorded in the Official Records of San Mateo County, California, and which are in effect as of the date of this Lease.

(h)Lessee shall surrender the Premises on or before the last day of the lease Term or any earlier termination date, in accordance with Paragraph 14(c) and this Paragraph 15(h), with all of the improvements to the Premises (including the Tenant Improvements), parts, and surfaces thereof clean and free of debris and in the operating order, condition, and state of repair existing as of the Commencement Date, ordinary wear and tear, the elements, acts of God, casualties, condemnation, alterations or other interior improvements which it is permitted to surrender at the termination of this Lease and repairs that Lessee is not responsible for under this Lease, excepted. Lessee's failure to surrender the Premises in accordance with the terms and conditions of this Lease, including, without limitation, this Paragraph 15(h) shall be deemed to be a material default under the Lease. "Ordinary wear and tear" shall not include any damage or deterioration that would have been prevented by good maintenance practice or by Lessee

performing all of its obligations under this Lease. Notwithstanding the foregoing, prior to the last day of the Term (or earlier termination of the Lease), Lessee shall (i) patch any holes in the walls of the Premises and paint any damaged areas to match the surrounding walls; (ii) replace any broken or damaged ceiling tiles in the Premises; and (iii) vacuum and steam clean all carpets and replace any damaged areas of the carpets to match the surrounding carpet. In addition to the foregoing, the obligations of Lessee shall include the repair of any damage occasioned by the installation, maintenance, or removal of Lessee's trade fixtures, furnishings, equipment, and alterations, and the restoration by Lessee of the Premises to its condition upon completion of the Work. Lessee shall not be required to remove the Work but shall remove all personal property, equipment and (A) any Alterations made after the Commencement Date if Lessor provided notice of its requirement of such removal and restoration upon expiration or sooner termination of the Lease term pursuant to Paragraph 15(d) at the time it consented thereto, or (B) if Lessee made any such alterations, additions, or improvements without obtaining Lessor's required prior written consent in breach of Paragraph 15(d), and within a reasonable time after the expiration or sooner termination of the Lease term Lessor gives written notice to Lessee requiring Lessee to perform such removal and restoration. Prior to the expiration of the term of this Lease or any earlier termination date, Lessee shall, at Lessee's expense, obtain written closure reports from the San Mateo County Health Department and from the Menlo Park Fire Protection District with respect to any Hazardous Materials used, stored, or released by Lessee on or about the Premises. Both written closure reports shall provide written certification that all Hazardous Materials have been removed from the Premises and that no further action is required in connection with the closure of the Premises. Any removal and remediation of Hazardous Materials by Lessee shall be certified in writing as (1) complete and (2) having been properly performed, by the San Mateo County Health Department and the Menlo Park Fire Protection District and a copy of such written certifications shall be delivered by Lessee to Lessor no later than the last day of the Term of this Lease.

16. Utilities and Services.

(a) Lessee shall contract for and pay for all separately metered electricity, water and gas, and Lessor shall contract for and pay for, and Lessee shall reimburse Lessor therefor pursuant to Paragraph 6 as an Operating Expense pursuant to the provisions of Paragraph 6, all common area electricity, gas, water, sewer, utility and other service charges. Lessee shall contract for and pay for janitorial service, refuse pick-up and any telephone, data or other communications services, any special utilities that serve only the Premises (e.g., distilled water, process gasses, etc.).

(b) Lessor shall not be liable to Lessee for any interruption or failure of any utility services to the Building or the Premises unless caused by the active negligence or willful acts of Lessor. Lessee shall not be relieved from the performance of any covenant or agreement in this Lease because of any such failure. Lessor shall make all repairs to the Premises required to restore such services to the Premises and the cost thereof shall be payable by Lessee pursuant to Paragraph 6 as a current Operating Expense, or as a capital improvement which is amortized over its useful life (together with interest thereon) as an Operating Expense in accordance with generally accepted accounting principles as described in Paragraph 6(b); provided, however, that Lessee shall have the option to pay for Lessee's Pro Rata Share of any such improvement as a

single lump-sum payment to avoid future interest costs described therein, and further provided that if such failure is caused by the active negligence or willful acts of Lessor, then Lessor shall bear such costs. Notwithstanding anything to the contrary contained in this Lease, if Lessee is prevented from using, and does not use, the Premises or any portion thereof, for thirty (30) consecutive days (the "**Eligibility Period**"), as a result of (i) any failure by Lessor to provide to the Premises any of the essential utilities and services required to be provided by Lessor pursuant to this Lease, or (ii) any failure by Lessor to provide access to the Premises (each failure which shall be an "**Interruption**"), then Lessee's obligation to pay Rent shall be abated, as the case may be, from and after the first (1st) day following the Eligibility Period and continuing until such time that Lessee continues to be so prevented from using, and does not use, the Premises or a portion thereof as a result of the Interruption, in the proportion that the rentable square feet of the portion of the Premises that Lessee is prevented from using, and does not use in the Premises bears to the total rentable square feet of the Premises; provided, however, that Lessee shall only be entitled to such abatement of Rent if the Interruption described in clauses (i) or (ii) of this sentence arises out of or results from Lessor's active negligence or willful misconduct; provided, further, that Lessee shall not be entitled to abatement or reduction of Rent to the extent the matters described in clauses (i) or (ii) above arise out of or results from an Interruption outside of Lessor's reasonable control. To the extent Lessee shall be entitled to abatement of Rent because of a Casualty pursuant to Paragraph 21 or a taking pursuant to Paragraph 22, then the terms of this Paragraph 16(b) shall not apply.

17. Liens. Lessee agrees to keep the Premises free from all liens arising out of any work performed, materials furnished, or obligations incurred by Lessee. Lessee shall give Lessor at least ten (10) calendar days prior written notice before commencing any work of improvement on the Premises, the contract price for which exceeds Ten Thousand and 00/100 Dollars ($10,000.00). Lessor shall have the right to post notices of non-responsibility with respect to any such work. If Lessee shall, in good faith, contest the validity of any such lien, claim or demand, then Lessee shall, at its sole expense, defend and protect itself, Lessor and the Property against the same, and shall pay and satisfy any such adverse judgment that may be rendered thereon before the enforcement thereof against the Lessor or the Property. If Lessor shall require, Lessee shall furnish to Lessor a surety bond satisfactory to Lessor in an amount equal to one and one-half times the amount of such contested claim or demand, indemnifying Lessor against liability for the same, as required by law for the holding of the Property free from the effect of such lien or claim.

18. Assignment and Subletting.

(a) Except as otherwise provided in this Paragraph 18, Lessee shall not assign this Lease, or any interest, voluntarily or involuntarily, and shall not sublet the Premises or any part thereof, or any right or privilege appurtenant thereto, or suffer any other person (the agents and servants of Lessee excepted) to occupy or use the Premises, or any portion thereof, without the prior written consent of Lessor in each instance pursuant to the terms and conditions set forth below, which consent shall not be unreasonably withheld or delayed, subject to the following provisions; provided, however, Lessee shall not assign this Lease, or any interest, voluntarily or involuntarily, and shall not sublet the Premises or any part thereof, or any right or privilege appurtenant thereto, or suffer any other person (the agents and servants of Lessee excepted) to

occupy or use the Premises, or any portion thereof, if Lessee shall be in default under this Lease past any applicable cure period.

(b)Prior to any assignment or sublease which Lessee desires to make, other than a Permitted Transfer (as defined in Paragraph 18(f) below), Lessee shall provide to Lessor the name and address of the proposed assignee or sublessee, and true and complete copies of all documents relating to Lessee's prospective agreement to assign or sublease, a copy of a then current financial statement for such proposed assignee or sublessee, and any other relevant information reasonably requested by Lessor within five (5) days after receipt of notice of the proposed assignment or sublease and Lessee shall specify all consideration to be received by Lessee for such assignment or sublease in the form of lump sum payments, installments of rent, or otherwise. For purposes of this Paragraph 18, the term "consideration" shall include all money or other consideration received by Lessee for such assignment or sublease. Within ten (10) days after the receipt of such documentation and other information, Lessor (1) shall notify Lessee in writing that Lessor elects to consent to the proposed assignment or sublease subject to the terms and conditions hereinafter set forth; (2) shall notify Lessee in writing that Lessor refuses such consent, specifying reasonable grounds for such refusal; or (3) except with respect to a Permitted Transferee, if at the time Lessee requests that Lessor consent to an assignment or sublease for all or substantially all of the remaining Lease Term, Lessee is not conducting on-going operations for the use permitted in Paragraph 9, above, in at least fifty-one percent (51%) of the Building, Lessor may notify Lessee that Lessor elects to terminate this Lease, provided that with respect to a proposed sublease of a portion of the Premises Lessor's termination right shall apply only to the proposed sublease space, and specifying the effective date of termination which shall be the same as the commencement date of the proposed sublease. If Lessor elects to terminate this Lease pursuant to the foregoing provision, upon the effective date of termination, Lessor and Lessee shall each be released and discharged from any liability or obligation to the other under this Lease accruing thereafter with respect to the Premises or the portion thereof to which the termination applies, except for any obligations then outstanding and except for any indemnity obligations which survive the expiration or termination of this Lease by the express terms hereof, and Lessee agrees that Lessor may enter into a direct lease with such proposed assignee or sublessee without any obligation or liability to Lessee.

In deciding whether to consent to any proposed assignment or sublease, Lessor may take into account whether reasonable conditions have been satisfied, including, but not limited to, the following:

(1)In Lessor's reasonable judgment, the proposed assignee or subtenant is engaged in such a business, that the Premises, or the relevant part thereof, will be used in such a manner which complies with Paragraph 9 (*Use*) and Lessee or the proposed assignee or sublessee submits to Lessor documentary evidence reasonably satisfactory to Lessor that such proposed use constitutes a permitted use of the Premises pursuant to the ordinances and regulations of the City of Menlo Park;

(2)The proposed assignee or subtenant is a reputable entity or individual with sufficient financial net worth so as to reasonably indicate that it will be able to meet its obligations under this Lease or the sublease in a timely manner;

(3)If at the time of the proposed transfer, Lessor has substantially similar space available for rent in the Menlo Business Park, the proposed assignee or subtenant is not a tenant of the Building or any other building in the Menlo Business Park; and,

(4)The proposed assignment or sublease is approved by Lessor's mortgage lender if such lender has the right to approve or disapprove proposed assignments or subleases. Lessor shall use its good faith efforts to obtain such approval from its lender within ten (10) days after receipt by Lessor of Lessee's written request for consent and the documentation and information referred to in the first sentence of Paragraph 18(b) above.

(c)As a condition to Lessor's granting its consent to any assignment or sublease, except with respect to any Permitted Transferees, (1) Lessor may require that Lessee pay to Lessor, as and when received by Lessee, fifty percent (50%) of the amount of any excess of the consideration received by Lessee in connection with said assignment or sublease over and above the Monthly Base Rent and Additional Rent fixed by this Lease and payable by Lessee to Lessor, after deducting (A) a standard leasing commission payable by Lessee in consummating such assignment or sublease, (B) the cost of reasonable tenant improvements performed specifically for the sublease and required to be made to the Premises to effectuate the sublease, provided that such improvements are performed in compliance with Paragraph 15(d) of this Lease, and (C) reasonable attorneys' fees incurred by Lessor in negotiating and reviewing the assignment or sublease documentation; and (2) Lessee and the proposed assignee or sublessee shall demonstrate to Lessor's reasonable satisfaction that each of the criteria referred to in subparagraph (b) above is satisfied.

(d)Each assignment or sublease agreement to which Lessor has consented shall be an instrument in writing in form satisfactory to Lessor, and shall be executed by both Lessee and the assignee or sublessee, as the case may be. Each such assignment or sublease agreement shall recite that it is and shall be subject and subordinate to the provisions of this Lease, that the assignee or sublessee accepts such assignment or sublease, that Lessor's consent thereto shall not constitute a consent to any subsequent assignment or subletting by Lessee or the assignee or sublessee, and, except as otherwise set forth in a sublease approved by Lessor, agrees to perform all of the obligations of Lessee hereunder (to the extent such obligations relate to the portion of the Premises assigned or subleased), and that the termination of this Lease shall, at Lessor's sole election, constitute a termination of every such assignment or sublease.

(e)In the event Lessor shall consent to an assignment or sublease, Lessee shall nonetheless remain primarily liable for all obligations and liabilities of Lessee under this Lease, including but not limited to the payment of Rent.

(f)Notwithstanding the foregoing, Lessee may, without Lessor's prior written consent and without any participation by Lessor in assignment and subletting proceeds, but with prior notice and documentation, as required pursuant to this Paragraph 18(f), provided to Lessor, sublet a portion or the entire Premises or assign this Lease to (i) a subsidiary, affiliate, division or corporation controlling, controlled by or under common control with Lessee ("**affiliate**"); (ii) to

a successor corporation to Lessee by merger, consolidation or reorganization; or (iii) to a purchaser of substantially all of Lessee's assets located on the Premises (each such transaction referred to herein as a "**Permitted Transfer**" and each of the foregoing transferees referred to herein as a "**Permitted Transferee**"), provided that any such Permitted Transferee that is an affiliate shall have a then current verifiable net worth immediately following the Permitted Transfer at least equal to that of Lessee on the Effective Date of this Lease and any such other Permitted Transferee not an affiliate shall have a then current verifiable net worth immediately following the Permitted Transfer which is at least equal to that of Lessee immediately prior to the Permitted Transfer or, if in any Permitted Transfer, the then current verifiable net worth of the Permitted Transferee (whether an affiliate or not) is less than required herein, such Permitted Transferee shall have the financial resources sufficient, in Lessor's reasonable good faith judgment, to perform the obligations under the assignment or sublease, as applicable. Lessee's foregoing rights in this Paragraph 18(f) to assign this Lease or to sublease all or a portion of the entire Premises shall be subject to the following conditions: (1) Lessee shall not be in default hereunder past any applicable cure period at the time of the sublease or assignment; (2) in the case of an assignment or subletting to an affiliate, Lessee shall remain liable to Lessor hereunder if Lessee is a surviving entity; (3) the transferee or successor entity (in each case, if different than Lessee) shall expressly assume in writing all of Lessee's obligations hereunder; and (4) Lessee shall provide Lessor with prior notice of such proposed transfer and deliver to Lessor all documents reasonably requested by Lessor relating to such transfer, including but not limited to documentation sufficient to establish such proposed transferee's (other than an affiliate) then current verifiable net worth prior to the transfer at least equal to that of Lessee on the Commencement Date of this Lease, or, if less, financial resources sufficient, in Lessor's reasonable good faith judgment, to perform the obligations under the assignment or sublease, as applicable; provided, however, that Lessee not be required to comply with the foregoing requirements regarding net worth or financial resources if the entity acquiring Lessee shall provide a guaranty of this Lease.

(g)Neither the sale nor transfer of Lessee's capital stock shall be deemed an assignment, subletting, or other transfer of this Lease or the Premises, provided, that in the event of the sale, transfer or issuance of Lessee's securities in connection with a transaction described in Paragraph 18(f), the conditions set forth in Paragraph 18(f) shall apply.

(h)Subject to the provisions of this Paragraph 18 any assignment or sublease (if such consent is required hereunder) without Lessor's prior written consent shall at Lessor's election be void. The consent by Lessor to any assignment or sublease shall not constitute a waiver of the provisions of this Paragraph 18, including the requirement of Lessor's prior written consent, with respect to any subsequent assignment or sublease. If Lessee shall purport to assign this Lease, or sublease all or any portion of the Premises, or permit any person or persons other than Lessee to occupy the Premises, without Lessor's prior written consent (if such consent is required hereunder), Lessor may collect Rent from the person or persons then or thereafter occupying the Premises and apply the net amount collected to the Rent reserved herein, but no such collection shall be deemed a waiver of Lessor's rights and remedies under this Paragraph 18, or the acceptance of any such purported assignee, sublessee, or occupant, or a release of Lessee from the further performance by Lessee of covenants on the part of Lessee herein contained.

(i)Lessee shall not hypothecate or encumber its interest under this Lease or any rights of Lessee hereunder, or enter into any license or concession agreement respecting all or any portion of the Premises, without Lessor's prior written consent which consent Lessor may grant or withhold in Lessor's absolute discretion without any liability to Lessee. Lessee's granting of any such encumbrance, license, or concession agreement shall constitute an assignment for purposes of this Paragraph 18.

(j)In the event of any sale or exchange of the Premises by Lessor and assignment of this Lease by Lessor, Lessor shall, upon providing Lessee with written confirmation that the assignee has assumed all obligations of Lessor under this Lease and Lessor has delivered any Security Deposit held by Lessor to Lessor's successor in interest, be and hereby is entirely relieved of all liability under any and all of Lessor's covenants and obligations contained in or derived from this Lease with respect to the period commencing with the consummation of the sale or exchange and assignment.

(k)Lessee hereby acknowledges that the foregoing terms and conditions are reasonable and, therefore, that Lessor has the remedy described in California Civil Code Section 1951.4 (Lessor may continue the Lease in effect after Lessee's breach and abandonment and recover Rent as it becomes due, if Lessee has the right to sublet or assign, subject only to reasonable limitations).

19.Non-Waiver.

(a)No waiver of any provision of this Lease shall be implied by any failure of Lessor to enforce any remedy for the violation of that provision, even if that violation continues or is repeated. Any waiver by Lessor of any provision of this Lease must be in writing.

(b)No receipt of Lessor of a lesser payment than the Rent required under this Lease shall be considered to be other than on account of the earliest Rent due, and no endorsement or statement on any check or letter accompanying a payment or check shall be considered an accord and satisfaction. Lessor may accept checks or payments without prejudice to Lessor's right to recover all amounts due and pursue all other remedies provided for in this Lease.

Lessor's receipt of any Rent or other payment from Lessee after giving notice to Lessee terminating this Lease shall in no way reinstate, continue, or extend the Lease term or affect the termination notice given by Lessor before the receipt of such Rent or payment. After serving notice terminating this Lease, filing an action, or obtaining final judgment for possession of the Premises, Lessor may receive and collect any Rent, and the payment of that Rent shall not waive or affect such prior notice, action, or judgment.

20.Holding Over. Lessee shall vacate the Premises and deliver the same to Lessor upon the expiration or sooner termination of this Lease. In the event of holding over by Lessee after the expiration or termination of this Lease, such holding over shall be on a month-to-month tenancy and all of the terms and provisions of this Lease shall be applicable during such period,

except that in addition to the payment of Additional Rent, Lessee shall pay Lessor as Monthly Base Rent during such holdover an amount equal to the greater of (i) one hundred fifty percent (150%) of the Monthly Base Rent in effect at the expiration of the Term, or (ii) the then market rent for comparable research and development/office space. If such holdover is without Lessor's written consent, Lessee shall be liable to Lessor for all costs, expenses, and consequential damages incurred by Lessor as a result of such holdover, including but not limited to damages resulting from Lessor's inability to timely deliver possession of the Premises to a new tenant. The rental payable during such holdover period without Lessor's written consent shall be payable to Lessor on demand.

21. Damage or Destruction.

(a) In the event of a total destruction of the Building during the term from any cause, either party may elect to terminate this Lease by giving written notice of termination to the other party within thirty (30) days after the casualty occurs. A total destruction shall be deemed to have occurred for this purpose if the Building or the Premises that are the subject of this Lease are destroyed to the extent of seventy-five percent (75%) or more of the replacement cost thereof. If the Lease is not terminated, Lessor shall repair and restore the Premises in a diligent manner and this Lease shall continue in full force and effect, except that Monthly Base Rent and Additional Rent of the Premises which are the subject of this Lease shall be abated in accordance with Paragraph 21(d) below.

(b) Subject to Paragraph 21(c), in the event of a partial destruction of the Building or the Premises to an extent less than seventy-five percent (75%) of the replacement cost thereof, and if Lessor reasonably believes that the damage thereto can be repaired, reconstructed, or restored within a period of two hundred seventy (270) days from the date of casualty, there are at least twelve (12) months remaining in the Term of this Lease, and the casualty is from a cause which is insured under Lessor's "all risk" property insurance, or is insured under any other coverage then carried by Lessor, Lessor shall forthwith repair the same back to the condition described in Schedules "F-1", "F-2", "F-3", and "F-4" and this Lease shall continue in full force and effect, except that Monthly Base Rent and Additional Rent shall be abated in accordance with Paragraph 21(d) below. All insurance proceeds available from the fire and property damage insurance carried by Lessor shall be paid to and become the property of Lessor. All insurance proceeds from Lessee's fire and property damage insurance covering the Tenant Improvements but excluding proceeds for Lessee's Personal Property shall also be paid to Lessor, as loss payee thereunder. If any of the foregoing conditions are not met, Lessor shall have the option of either repairing and restoring the Building and Improvements, or terminating this Lease by giving written notice of termination to Lessee within sixty (60) days after the casualty. Notwithstanding anything to the contrary contained in this Paragraph 21, Lessor shall not have the right to terminate this Lease if the cost to repair the damage to the Building or to restore the Premises would cost less than five percent (5%) of the replacement cost of the Building, regardless of whether or not the casualty is insured, provided that there are at least twelve (12) months remaining in the Term of this Lease. If the cost to restore the Premises exceeds five percent (5%) of the replacement cost, and Lessor elects to terminate this Lease, Lessee may nullify the effect of such termination by giving Lessor written notice within ten (10) days after receipt by Lessee of Lessor's notice of termination that Lessee shall reimburse Lessor

for the costs to restore the Premises in excess of the insurance proceeds available, which costs exceed five percent (5%) of the replacement cost, in which event this Lease shall remain in effect, provided that Rent abatement shall not extend beyond the date that the restoration is completed.

(c)Lessor's election to repair and restore the Building and Improvements or to terminate this Lease under Paragraph 21(b), shall be made and written notice thereof shall be given to Lessee within sixty (60) days after the casualty. Notwithstanding the foregoing, in the event of a partial destruction of the Building or the Property to an extent less than seventy-five percent (75%) of the Building or Premises, or if the damage thereto cannot be repaired, reconstructed, or restored within a period of one hundred eighty (180) days from the date a building permit is issued for reconstruction, Lessee may terminate this Lease by giving written notice of termination to Lessor within sixty (60) days after the casualty. The foregoing shall not affect Lessor's termination rights under Paragraph 21(b) above.

(d)In the event of repair, reconstruction, or restoration as provided herein, the Monthly Base Rent and Additional Rent shall be abated in proportion to the extent to which Lessee's use of the Premises is completely impaired and Lessee does not use such portion of the Premises during the period of repair from the date of the casualty until such repair is Substantially Completed.

(e)With respect to any destruction of the Building and the Work which Lessor is obligated to repair, or may elect to repair, under the terms of this Paragraph 21, the provisions of Section 1932, Subdivision 2, and of Section 1933, Subdivision 4, of the Civil Code of the State of California are waived by the parties. Provided Lessor receives sufficient insurance proceeds from Lessee's fire and property insurance to repair or replace any alterations in the Premises constructed after the Commencement Date damaged in the casualty event, Lessor's obligation to repair and restore the Building and Improvements shall include the Work referred to in Paragraph 14(a) and any future-installed alterations. Lessor's time for completion of the repairs and restoration of the Building and Improvements referred to above shall be extended by a period equal to any delays caused by Tenant Delay or force majeure.

(f)In the event of termination of this Lease pursuant to any of the provisions of this Paragraph 21, the Monthly Base Rent and Additional Rent shall be apportioned on a per diem basis and shall be paid to the date of the casualty. In no event shall Lessor be liable to Lessee for any damages resulting to Lessee from the occurrence of such casualty, or from the repairing or restoration of the Building and Improvements, or from the termination of this Lease as provided herein, nor shall Lessee be relieved thereby from any of Lessee's obligations hereunder, except to the extent and upon the conditions expressly set forth in this Paragraph 21.

22.Eminent Domain.

(a)If the whole or any substantial part of the Property or the Premises is taken or condemned by any competent public authority for any public use or purpose, the term of this Lease shall end upon the earlier to occur of the date when the possession of the part so taken shall be required for such use or purpose or the vesting of title in such public authority. Rent

shall be apportioned as of the date of such termination. Any award arising from the condemnation of any portion of the Property or the settlement thereof shall belong to and be paid to Lessor. However, Lessee may file a separate claim at Lessee's sole cost and expense for (i) leasehold improvements installed at Lessee's expense or other property owned by Lessee, and (ii) reasonable costs of moving by Lessee to another location in San Mateo County or surrounding areas within the San Francisco Bay Area. In all events, Lessor shall be solely entitled to any award with respect to the real property, including the bonus value of the leasehold.

(b)If there is a partial taking of the Property by eminent domain which is not a substantial part of the Property and the Premises remain reasonably suitable for continued use and occupancy by Lessee for the purposes referred to in Paragraph 9 (*Use*), Lessor shall complete any necessary repairs in a diligent manner and this Lease shall remain in full force and effect with a just and proportionate abatement of the Monthly Base Rent and Additional Rent, based on the extent to which Lessee's use of the Premises is completely impaired thereafter. If after a partial taking, the Premises are not reasonably suitable for Lessee's continued use and occupancy for the uses permitted herein, Lessee may terminate this Lease effective on the earlier of the date title vests in the public authority or the date possession is taken. Subject to the provisions of Paragraph 22(a), the entire award for such taking shall be the property of Lessor.

23.Remedies. If (a) Lessee fails to make any payment of Rent or any other sum due under this Lease within five (5) days after receipt by Lessee of written notice from Lessor; or (b) Lessee breaches any other term, provision or covenant of this Lease (except a breach as described in Paragraph 23(c) below) for thirty (30) days after receipt by Lessee of written notice from Lessor or such shorter time period specified in this Lease (unless such default is incapable of cure within thirty (30) days and Lessee commences cure as soon as reasonably practical within such thirty (30) day period and thereafter diligently prosecutes the cure to completion within a reasonable time not to exceed sixty (60) days after commencing the cure); or (c) after the first (1st) anniversary of the Commencement Date, Lessee breaches the provisions set forth in Paragraph 15(c)(ii), Paragraph 15(c)(iii), Paragraph 15(c)(iv), Paragraph 15(c)(v) or Paragraph 15(c)(vi) of this Lease, and, following such breach, either (i) fails to commence to cure such breach within five (5) business days after receipt of written notice from Lessor and, thereafter, to diligently prosecute the cure to completion three (3) or more times in a twelve (12) month period, or (ii) fails more than once in a twelve (12) month period to cure such breach within a reasonable time after receipt of written notice from Lessor; or (d) Lessee's interest herein, or any part thereof, is assigned or transferred, either voluntarily or by operation of law (except as expressly permitted by other provisions of this Lease); or (e) Lessee makes a general assignment for the benefit of its creditors; or (f) if this Lease is rejected (i) by a bankruptcy trustee for Lessee, (ii) by Lessee as debtor in possession, or (iii) by failure of Lessee as a bankrupt debtor to act timely in assuming or rejecting this Lease; then any of such events shall constitute an event of default and breach of this Lease by Lessee and Lessor may, at its option, elect the remedies specified in either subparagraph (a) or (b) below. Any Lessor notice referred to above must set forth in reasonable detail the nature and extent of the failure referencing pertinent Lease provisions. Any such rejection of this Lease referred to above shall not cause an automatic termination of this Lease. Whenever in this Lease reference is made to a default by Lessee, such reference shall refer to an event of default as defined in this Paragraph 23.

(a)Lessor may repossess the Premises and remove all persons and property therefrom. If Lessor repossesses the Premises because of a breach of this Lease, this Lease shall terminate and Lessor may recover from Lessee:

(1)the worth at the time of award of the unpaid Rent which had been earned at the time of termination including interest thereon at a rate equal to the discount rate established by the Federal Reserve Bank of San Francisco for member banks, plus one percent (1%), or the maximum legal rate of interest, whichever is less, from the time of termination until paid;

(2)the worth at the time of award of the amount by which the unpaid Rent which would have been earned after termination until the time of award exceeds the amount of such rental loss that Lessee proves could have been reasonably avoided, including interest thereon at a rate equal to the Federal discount rate plus one percent (1%) per annum, or the maximum legal rate of interest, whichever is less, from the time of termination until paid;

(3)the worth at the time of award of the amount by which the unpaid Rent for the balance of the term after the time of award exceeds the amount of such rental loss for the same period that Lessee proves could be reasonably avoided discounted at the discount rate established by the Federal Reserve Bank of San Francisco for member banks at the time of the award plus one percent (1%); and

(4)any other amount necessary to compensate Lessor for all the detriment proximately caused by Lessee's breach or by Lessee's failure to perform its obligations under this Lease or which in the ordinary course of things would be likely to result therefrom.

(b)If Lessor does not repossess the Premises, then this Lease shall continue in effect for so long as Lessor does not terminate Lessee's right to possession and Lessor may enforce all of its rights and remedies under this Lease, including the right to recover the Rent and other sums due from Lessee hereunder. For the purposes of this Paragraph 23, the following do not constitute a repossession of the Premises by Lessor or a termination of the Lease by Lessor:

(1)Acts of maintenance or preservation by Lessor or efforts by Lessor to relet the Premises; or

(2)The appointment of a receiver by Lessor to protect Lessor's interests under this Lease.

(c)Lessor's failure to perform or observe any of its obligations under this Lease or to correct a breach of any warranty or representation made in this Lease within thirty (30) days after receipt of written notice from Lessee setting forth in reasonable detail the nature and extent of the failure referencing pertinent Lease provisions or if more than thirty (30) days is required to cure the breach, Lessor's failure to begin curing within the thirty (30) day period and diligently prosecute the cure to completion, shall constitute a default. If Lessor commits a

default, Lessee's sole remedy shall be to institute an action against Lessor for damages or for equitable or injunctive relief, but Lessee shall not have the right to punitive damages, consequential damages, rent abatement, offset against Rent, or to terminate this Lease in the event of any default by Lessor.

(d)All covenants and agreements to be performed by Lessee under this Lease shall be at its sole cost and expense and without abatement of Rent or other sums due under this Lease, unless otherwise specified in this Lease. If Lessee shall fail to pay any sum of money required to be paid by Lessee under this Lease or shall fail to perform any other act on Lessee's part to be performed under this Lease within the time periods described in the first paragraph of Paragraph 23(a), Lessor may, but shall not be obligated so to do and without waiving or releasing Lessee from any obligations of Lessee, make any such payment or perform any such other act on Lessee's part to be made or performed as provided in this Lease. All sums paid by Lessor, whether to fulfill Lessee's unfulfilled payment obligations, to perform Lessee's unfulfilled performance obligations, or to compel Lessee to fulfill or perform its obligations under this Lease, and all incidental costs, including attorneys' fees, plus an administrative fee of five percent (5%) of all amounts so expended by Lessor, shall be deemed additional rent hereunder and shall be payable to Lessor upon demand.

24.Lessee's Personal Property. If any personal property of Lessee remains on the Premises after (1) Lessor terminates this Lease pursuant to Paragraph 23 above following an event of default by Lessee, or (2) after the expiration of the Lease Term or after the termination of this Lease pursuant to any other provisions hereof, Lessor shall give written notice thereof to Lessee pursuant to applicable law. Lessor shall thereafter release, store, and dispose of any such personal property of Lessee in accordance with the provisions of applicable law.

25.Notices. All notices, demands, consents or approvals (collectively, "**Notices**") which may or are required to be given by either party to the other under this Lease shall be in writing and shall be deemed to have been fully given (a) when received or refused, if personally delivered, (b) three (3) business days after being deposited in the United States mail, postage prepaid, sent by Certified or Registered Mail, or (d) one (1) business day after being deposited with a nationally recognized overnight courier service. Each Notice shall be addressed to Lessor and Lessee at the following address, or to such place as either party may from time to time designate in a written notice to the other party:

Lessor:

Menlo Park Portfolio II, LLC
c/o Tarlton Properties, Inc.
1530 O'Brien Drive, Suite C
Menlo Park, California 94025
Attention: John C. Tarlton, President
Telephone: (650) 330-3600

Lessee:

Prior to Commencement Date:

Pacific Biosciences of California, Inc.
1380 Willow Rd.
Menlo Park, California 94025
Attention: General Counsel
Telephone: (650) 521-8000

After the Commencement Date:

Pacific Biosciences of California, Inc.
1315 or 1305 O'Brien Drive, Building #3
Menlo Park, California 94025
Attention: General Counsel
Telephone: (650) 521-8000

26. Estoppel Certificate. Lessee and Lessor shall within ten (10) days following request by the other party (the "**Requesting Party**"), execute and deliver to the Requesting Party an estoppel certificate (1) certifying that this Lease has not been modified and certifying that this Lease is in full force and effect, or, if modified, stating the nature of such modification and certifying that this Lease, as so modified, is in full force and effect; (2) stating the date to which the Rent and other charges are paid in advance, if at all; (3) stating the amount of any Security Deposit held by Lessor; (4) acknowledging that there are not, to the responding party's then current actual knowledge without inquiry, any uncured defaults on the part of the Requesting Party hereunder, or if there are uncured defaults on the part of the Requesting Party, stating the nature of such uncured defaults; and (5) any other provisions reasonably requested by either party.

27. Signage. Lessee shall have the use of Lessee's Pro Rata Share of the monument sign and lobby sign for Building #3 for Lessee's signage. Lessee may place Lessee's vinyl lettering signage on the glass near the front door entrance to the Building and in the interior of the Building, subject to Lessor's reasonable requirements and consent and subject to the requirements of the City of Menlo Park. All of Lessee's signage shall comply with the City of Menlo Park sign ordinances and regulations and shall be subject to Lessor's approval as to the specific location, size and design thereof. The cost of the installation of Lessee's signage on the monument, on the glass near the front entrance to the Building and within the interior of the Building shall be paid by Lessee. All signage shall be subject to Lessor's prior approval and any additional signage (if any), if approved, shall be installed at Lessee's expense.

28. Real Estate Brokers. Lessee's broker is Cornish and Carey Newmark Knight Frank (CCNKF) ("**Lessee's Broker**") and Lessor's broker is Kidder Matthews ("**Lessor's Broker**" and collectively with Lessee's Broker, the "**Brokers**"). Lessor shall pay a leasing commission to the Brokers pursuant to a separate agreement. Each party represents and warrants to the other party that it has not had any dealings with any real estate broker, finder, or other person with respect to this Lease other than Lessee's Broker and Lessor's Broker and each party shall hold harmless the other party from all damages, expenses, and liabilities resulting from any

claims that may be asserted against the other party by any broker, finder, or other person with whom the other party has or purportedly has dealt, other than the above named brokers.

29.Parking. Lessee shall have the right to three (3) parking spaces per thousand rentable square feet of the Premises at no additional cost to Lessee during the initial term of the Lease, in the parking area for the Building or nearby parking areas in Menlo Business Park, subject to such rules and regulations for such parking facilities which may be established or altered by Lessor at any time from time to time during the Lease Term; provided, however, that if Lessor builds a parking structure in the Menlo Business Park during the Lease Term (the "**Parking Structure**"), Lessor shall grant to Lessee the non-exclusive use of Two Hundred Ten (210) unreserved on-site vehicular parking spaces within such structure at no additional base rent to Lessee for the initial Term of the Lease; provided, however, that the parties agree and acknowledge that the Lessee's Pro-Rata Share and Lessee's Pro-Rata Share with respect to the Parking Structure shall be adjusted in a fair and reasonable manner if and when the Parking Structure is built. Vehicles of Lessee or its employees shall not park in driveways or occupy parking spaces or other areas reserved for deliveries, or loading or unloading. Notwithstanding anything to the contrary herein, Lessee shall not be required to comply with any new rule or regulation or be bound by any new covenant, condition, restriction or other encumbrance on the Property unless the same applies non-discriminatorily to all occupants of the Property, does not unreasonably interfere with Lessee's use of the Premises or Lessee's parking rights and does not materially increase the obligations or decrease the rights of Lessee with respect to parking under this Lease. The parties further acknowledge and agree that Lessor has filed a Transportation Demand Management Plan ("TDMP") with the City of Menlo Park and, as the same may be amended from time to time, Lessee shall provide to the coordinator of the TDMP information pertinent to car and van pooling, and Lessee shall comply with other reasonable TDMP reporting requirements. Lessee shall be entitled to the same rights and benefits of such TDMP as all tenants of the Menlo Business Park subject to the TDMP during the Lease Term.

30.Subordination; Attornment.

(a)This Lease, without any further instrument, shall at all times be subject and subordinate to the lien of any and all mortgages and deeds of trust (a "**Security Instrument**") which may now or hereafter be placed on, against or affect Lessor's estate in the real property of which the Premises form a part, and to all advances made or hereafter to be made upon the security thereof, and to all renewals, modifications, consolidations, replacements and extensions thereof. This clause shall be self-operative and no further instrument of subordination need be required by any owner or holder of any Security Instrument provided however, that in consideration of Lessee's agreement to subordinate this Lease to any future Security Instrument, such subordination shall be subject to the receipt by Lessee of a subordination non-disturbance and attornment agreement in a commercially reasonable form provided by the holder of such future Security Instrument, which requires the holder of such Security Instrument to accept this Lease, and not to disturb Lessee's possession, so long as an event of Lessee's default has not occurred and be continuing (a "**SNDA**"), executed by the holder of such Security Instrument.

(b)In confirmation of such subordination, Lessee covenants and agrees to execute and deliver within ten (10) days of Lessor's request any certificate or other instrument which Lessor may reasonably deem proper to evidence such subordination in commercially reasonable form (which document recognizes Lessee's rights under this Lease), without expense to Lessee; provided, however, that if any person or persons purchasing or otherwise acquiring the real property of which the Premises form a part by any sale, sales and/or other proceedings under such mortgages and/or deeds of trust, shall elect to continue this Lease in full force and effect in the same manner and with like effect as if such person or persons had been named as Lessor herein, then this Lease shall continue in full force and effect as aforesaid, and Lessee hereby attorns and agrees to attorn to such person or persons in writing upon request.

(c)If Lessee is notified in writing of Lessor's default under any deed of trust affecting the Premises and if Lessee is instructed in writing by the party giving notice to make Lessee's rental payments to such beneficiary, Lessee shall comply with such request without liability to Lessor (and with full credit of any amounts paid to such party by Lessee to the corresponding amounts owed to Lessor) until Lessee receives written confirmation that such default has been cured by Lessor and that the deed of trust has been reinstated.

31.No Termination Right. Except as expressly provided herein, Lessee shall not have the right to terminate this Lease as a result of any default by Lessor, and Lessee's remedies in the event of a default by Lessor shall be limited to the remedy set forth in Paragraph 23(c). Lessee expressly waives the defense of constructive eviction.

32.Lessor's Entry. Except in the case of an emergency and except for permitted entry during Lessee's normal working hours for scheduled maintenance, both of which may occur without prior notice to Lessee, Lessor and Lessor's agents shall provide Lessee with at least twenty-four (24) hours' notice prior to entry of the Premises. Lessor may enter the Premises for any reasonable purpose related to Lessor's ownership of the Property. Such entry by Lessor and Lessor's agents shall not impair Lessee's operations more than reasonably necessary and shall comply with Lessee's reasonable security measures, if any. Lessor and Lessor's agents shall at all times be accompanied by Lessee during any such entry except in case of emergency and except for janitorial work (if provided by Lessor). Lessor may enter the Premises at any time without prior notice to Lessee if the Premises are vacant, if Lessee is no longer conducting its ordinary business at the Premises, or if Lessee has made a general assignment for the benefit of creditors.

33.Attorneys' Fees. If any action at law or in equity shall be brought to recover any Rent under this Lease, or for or on account of any breach of or to enforce or interpret any of the provisions of this Lease or for recovery of the possession of the Premises, the prevailing party shall be entitled to recover from the other party costs of suit and reasonable attorneys' fees, the amount of which shall be fixed by the court and shall be made a part of any judgment rendered.

34.Quiet Enjoyment. Upon payment by Lessee of the Rent for the Premises and the observance and performance of all of the covenants, conditions, and provisions on Lessee's part to be observed and performed under this Lease within applicable notice and cure periods, Lessee

shall have quiet enjoyment and possession of the Premises for the entire term hereof subject to all of the provisions of this Lease.

35. Financial Information. Lessee represents and warrants to Lessor that all financial and other information that it has provided to Lessor prior to the date of this Lease is true, correct and complete.

36. SDN List. Lessee represents and warrants to Lessor that Lessee is not, and the entities that own or control Lessee, or that may be owned or controlled by Lessee (in all cases, other than through the ownership of publicly traded, direct or indirect ownership interests) (each a "**Subject Lessee Party**") are not, (i) in violation of any Applicable Laws relating to terrorism or money laundering, or (ii) among the individuals or entities identified on any list compiled pursuant to Executive Order 13224 or published by the Office of Foreign Assets Control, U.S. Department of the Treasury ("**OFAC**") for the purpose of identifying suspected terrorists or on the most current list published by the OFAC at its official website, http://www.treas.gov/ofac/tllsdn.pdf or any replacement website or other replacement official publication of such list which identifies an "Specially Designated National" or "blocked person" (either of which are referred to herein as a "**SDN**"). If at any time during the Lease Term Lessor discovers that Lessee has breached the foregoing representations and warranties, or Lessor reasonably believes that Lessee or any Subject Lessee Party is in violation of any Applicable Laws relating to terrorism or money laundering or that Lessee or any Subject Lessee Party is identified as an SDN, Lessee shall be deemed in default under this Lease following three (3) days written notice from Lessor to Lessee unless, within such three day period, Lessee delivers written evidence, reasonably acceptable to Lessor, that Lessee is not in violation of such Applicable Laws or that Lessee (or the Subject Lessee Party, as applicable) is not a person or entity identified as an SDN. Except as otherwise expressly provided in the foregoing sentence, and without further notice, any default by Lessee under this Paragraph 35 shall be deemed an incurable default by Lessee and, in addition to any other rights and remedies that Lessor may have upon such default, Lessor shall also have the right to immediately terminate this Lease upon written notice to Lessee and recover possession of the Premises.

37. General Provisions.

(a) Nothing contained in this Lease shall be deemed or construed by the parties hereto or by any third person to create the relationship of principal and agent or of partnership or of joint venture of any association between Lessor and Lessee, and neither the method of computation of Rent nor any other provisions contained in this Lease nor any acts of the parties hereto shall be deemed to create any relationship between Lessor and Lessee other than the relationship of landlord and tenant.

(b) Each and all of the provisions of this Lease shall be binding upon and inure to the benefit of the parties hereto, and except as otherwise specifically provided elsewhere in this Lease, their respective heirs, executors, administrators, successors, and assigns, subject at all times, nevertheless, to all agreements and restrictions contained elsewhere in this Lease with respect to the assignment, transfer, encumbering, or subletting of all or any part of Lessee's interest in this Lease.

(c)The captions of the paragraphs of this Lease are for convenience only and shall not be considered or referred to in resolving questions of interpretation or construction.

(d)This Lease is and shall be considered to be the only agreement between the parties hereto and their representatives and agents. All negotiations and oral agreements acceptable to both parties have been merged into and are included herein. There are no other representations or warranties between the parties and all reliance with respect to representations is solely upon the representations and agreements contained in this instrument.

(e)The laws of the State of California shall govern the validity, performance, and enforcement of this Lease. Notwithstanding which of the parties may be deemed to have prepared this Lease, this Lease shall not be interpreted either for or against Lessor or Lessee, but this Lease shall be interpreted in accordance with the general tenor of the language in an effort to reach an equitable result.

(f)Time is of the essence with respect to the performance of each of the covenants and agreements contained in this Lease.

(g)Recourse by Lessee for breach of this Lease by Lessor shall be expressly limited to the amount of Lessor's interest in the Property and the rents, issues, insurance, condemnation, and sales proceeds actually received by Lessor, and profits therefrom, and in the event of any such breach or default by Lessor, Lessee hereby waives the right to proceed against any other assets of Lessor or against any other assets of any manager or member of Lessor.

(h)Any provision or provisions of this Lease which shall be found to be invalid, void or illegal by a court of competent jurisdiction, shall in no way affect, impair, or invalidate any other provisions hereof, and the remaining provisions hereof shall nevertheless remain in full force and effect.

(i)This Lease may be modified in writing only, signed by the parties in interest at the time of such modification.

(j)Each party represents to the other that the person signing this Lease on its behalf is properly authorized to do so.

(k)No binding agreement between the parties with respect to the Premises shall arise or become effective until this Lease has been duly executed by both Lessee and Lessor and a fully executed copy of this Lease has been delivered to both Lessee and Lessor.

(l)Lessor and Lessee each acknowledge that the content of this Lease and any related documents are confidential information. Lessor and Lessee shall keep such confidential information strictly confidential and, except to the extent required by applicable law, including, but not limited to any securities laws or regulations or court order, shall not disclose such confidential information to any person or entity other than to such party's financial, legal, or accounting advisors, or such party's employees, officers, directors, shareholders, lender, space

planning consultants, architects and contractors, and prospective assignees or subtenants of Lessee or any prospective buyer of the Property, or in any dispute proceeding between the parties relating to this Lease. Notwithstanding the foregoing, Lessor and Lessee shall not be obligated to keep confidential: (i) information that is or becomes available to the public other than as a result of Lessor's or Lessee's disclosure in violation of this Lease; (ii) information that is or becomes available on a non-confidential basis to Lessor or Lessee from a source other than Lessor or Lessee, as applicable; (iii) information that was known to Lessor or Lessee on a non-confidential basis prior to the disclosure of such information to Lessor or Lessee, as applicable, under protection of this Lease; or (iv) information released from confidential treatment by written consent of Lessor or Lessee, as applicable. Neither Lessor or Lessee shall send out any press releases about the execution and delivery of this Lease without the other party's prior written consent, which consent shall not be unreasonably withheld. A violation of this subparagraph (l) shall not permit either party to terminate this Lease.

(m)Except as provided in Paragraph 23(c), the rights and remedies that either party may have under this Lease or at law or in equity, upon any breach, are distinct, separate and cumulative and shall not be deemed inconsistent with each other, and no one of them shall be deemed to be exclusive of any other.

(n)Lessee waives any claim for consequential damages which Lessee may have against Lessor for breach of or failure to perform or observe the requirements and obligations created by this Lease.

(o)Lessor and Lessee each agree to and they hereby do, to the maximum extent permitted by law, waive trial by jury in any action, proceeding or counterclaim brought by either of the parties hereto against the other on any matters whatsoever arising out of or in any way connected with this Lease, the relationship of Lessor and Lessee, Lessee's use or occupancy of the Premises and/or any claim of injury or damage, and any statutory remedy.

(p)This Lease shall not be recorded.

(q)Lessee hereby waives any and all rights under and benefits of California Civil Code Section 1938 and acknowledges that neither the Building nor the Premises has undergone inspection by a Certified Access Specialist (CASp).

(r)In the event that the Lessee is permitted and elects to contract directly for the provision of electricity, gas and/or water services to the Premises with the third-party provider thereof (all in Lessor's reasonable discretion), Lessee shall within ten (10) business days following its receipt of written request from Lessor, provide Lessor with a copy of each requested invoice from the applicable utility provider. Lessee acknowledges that pursuant to California Public Resources Code Section 25402.10 and the regulations adopted pursuant thereto (collectively the "**Energy Disclosure Requirements**"), Lessor may be required to disclose information concerning Lessee's energy usage at the Building to certain third parties, including, without limitation, prospective purchasers, lenders and tenants of the Building (the "**Lessee Energy Use Disclosure**"). Lessee hereby (A) consents to all such Lessee Energy Use Disclosures, and (B) acknowledges that Lessor shall not be required to notify Lessee of any

Lessee Energy Use Disclosure. Further, Lessee hereby releases Lessor from any and all losses, costs, damages, expenses and liabilities relating to, arising out of and/or resulting from any Lessee Energy Use Disclosure. The terms of this Paragraph 37(r) of the Lease shall survive the expiration or earlier termination of this Lease

(s)Whenever this Lease requires an approval, consent, determination, selection or judgment by either Lessor or Lessee, unless another standard is expressly set forth, such approval, consent, determination, selection or judgment and any conditions imposed thereby shall be reasonable and shall not be unreasonably withheld or delayed and, in exercising any right or remedy hereunder, each party shall at all times act reasonably and in good faith.

[SIGNATURES ON FOLLOWING PAGES]

IN WITNESS WHEREOF, the Lessor and Lessee have duly executed this Lease as of the date first set forth herein.

"**Lessor**"

MENLO PARK PORTFOLIO II, LLC,
a Delaware limited liability company

By: PREHC MENLO PARK PORTFOLIO II MEMBER, LLC,
a Delaware limited liability company
Its: Co-Managing Member

By: PRINCIPAL REAL ESTATE INVESTORS, LLC,
a Delaware limited liability company, authorized signatory

By: /s/ Michael S. Bensen
Name: Michael S. Bensen
Title: Assistant Managing Director Asset Management

By: /s/ Troy A. Koerselman
Name: Troy A. Koerselman
Title: Assistant Managing Director Asset Management

By: TPI INVESTORS 11, LLC,
A California limited liability company

By: TARLTON PROPERTIES, INC., a California corporation
Its: Managing Member

By: /s/ John C. Tarlton
Name: John C. Tarlton
Title: CEO

[SIGNATURE OF LESSEE ON FOLLOWING PAGE]

"**Lessee**"

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.,
a Delaware corporation

By:	/s/ Ben Gong
Printed Name:	Ben Gong
Its:	VP Finance

By:	
Printed Name:	
Its:	

EXHIBIT “A”

THE LAND

Real property in the City of Menlo Park, County of San Mateo, State of California, described as follows:

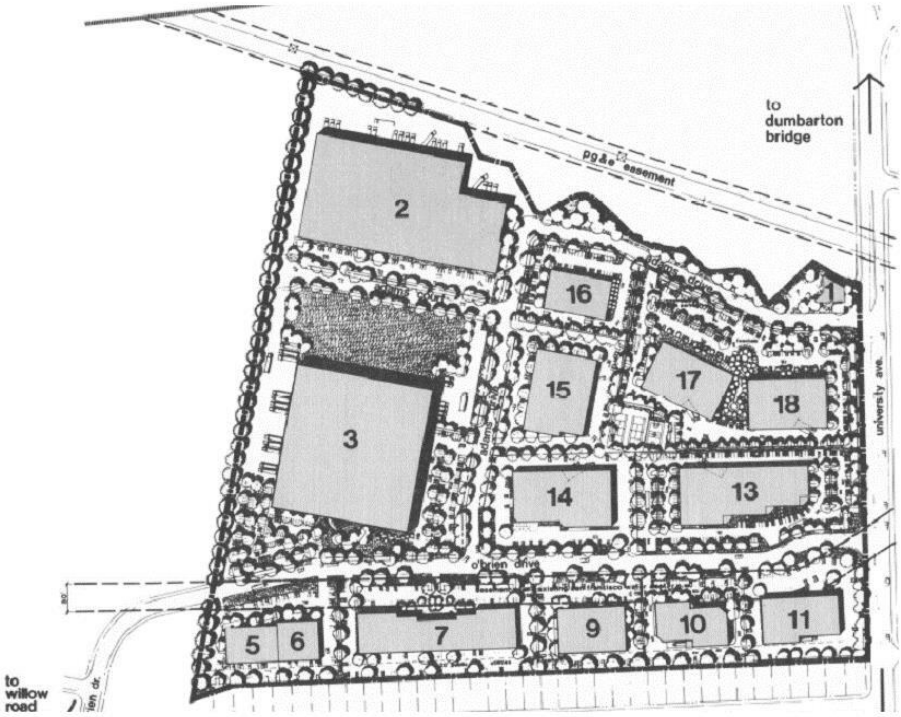
PARCEL A, AS SHOWN ON PARCEL MAP FOR THE PURPOSE OF ELIMINATING THE LINE BETWEEN LOTS 3 AND 4 OF MENLO BUSINESS PARK, ETC., FILED FEBRUARY 27, 1987, IN BOOK 58 OF PARCEL MAPS, PAGE 74, SAN MATEO COUNTY RECORDS.

APN: 055-472-030

JPN: 111-050-000-03T, 111-040-000-04T

EXHIBIT “B”
MENLO BUSINESS PARK MASTER PLAN
(See Attached)

EXHIBIT “B”



area map

project tabulation

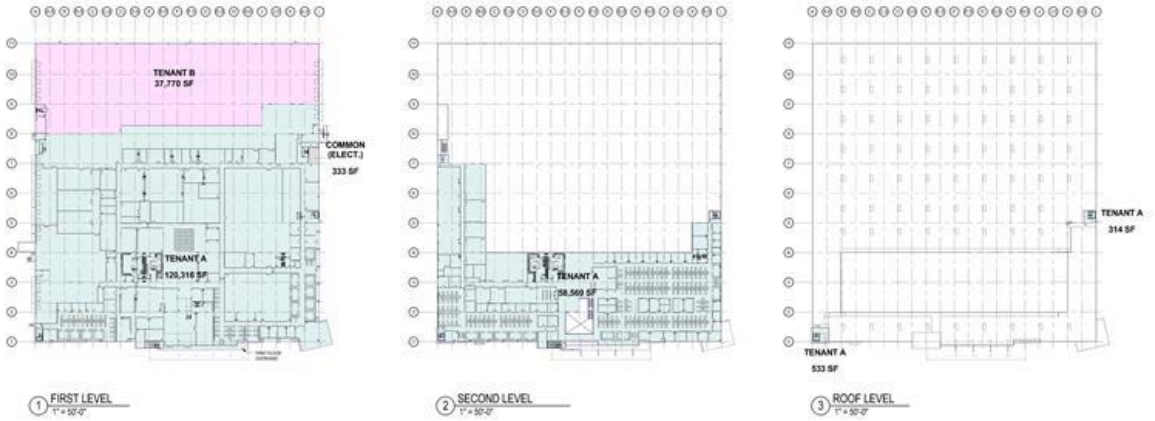
lot	use	land	building	footprint	mezzanine	footprint coverage	f.a.r.	parking
1	office	1.02	7,500	7,500	—	17%	.17	25
2	whse.	6.97	152,067	152,067	—	50%	.50	166
3	↓	11.2	217,770	160,083	57,687	33%	.45	268
5	lt. mfg. R&D	1.36	25,330	17,808	7,522	30%	.42	78
6		1.13	19,880	14,720	5,160	30%	.40	72
7		3.53	64,734	46,748	17,986	30%	.42	177
9		1.82	32,739	23,750	8,989	30%	.41	111
10		1.68	32,000	22,030	9,970	30%	.44	76
11		2.11	35,125	24,805	10,320	27%	.38	105
10		3.68	72,656	49,056	23,600	31%	.45	236
14		2.67	59,272	41,430	17,842	36%	.51	159
15		2.45	45,750	38,394	7,356	36%	.43	154
16		1.62	31,680	19,360	12,320	27%	.45	103
17/18	↓	6.06	94,240	63,360	30,880	24%	.36	332
TOTAL		47.30	890,743	681,111	209,632	33%	.43	2,062

EXHIBIT “B”

EXHIBIT “C”
Floor Plan of Premises in Building #3
(See Attached)

EXHIBIT “C”

EXHIBIT "C"



TOTAL COMMON AREA	**333 SF**
TOTAL TENANT USABLE AREA	**217,437 SF**
TOTAL AREA	**217,770 SF**

	FLOOR USABLE AREA	% OF COMMON AREA	FLOOR RENTABLE AREA
TENANT A	179,725 SF	82.66% = 275 SF	**180,000 SF**
TENANT B	37,712 SF	17.34% = 58 SF	**37,770 SF**
TOTAL	217,437 SF	100% = 333 SF	**217,770 SF**

TARLTON **MENLO BUSINESS PARK LOT 3**

FLOOR RENTABLE AREA
PRE-MEASURED 10019.004

V4

DES ARCHITECTS ENGINEERS

EXHIBIT “D”
Commencement Memorandum

To: _____ Date: _____ 2014

Re:Lease dated July ___, 2016 between MENLO PARK PORTFOLIO II, LLC, hereafter referred to as Lessor, and PACIFIC BIOSCIENCES OF CALIFORNIA, INC., a Delaware corporation, Lessee, concerning the Premises consisting of approximately One Hundred Eighty Thousand (180,000) rentable square feet in the building commonly known as 1305 O’Brien Drive, Menlo Park, California.

Gentlemen:

In accordance with the subject Lease, we hereby confirm the following:

1.That the Premises have been unconditionally accepted by Lessee, except as noted on the attached.

2.That Lessee has possession of the Premises and acknowledges that pursuant to the Lease, the initial term of the Lease commenced on_____, 2016 (the “Commencement Date”), and shall expire on _____, 201_.

3.That in accordance with the provisions of the Lease, Monthly Base Rent and Additional Rent commenced to accrue on_____, 2016.

4.Thereafter, Rent is due and payable in advance on the first day of each month during the term of the Lease. Rent checks should be made payable to Lessor, c/o Tarlton Properties, Inc., 1530 O’Brien Drive, Suite C Menlo Park, California 94025.

AGREED AND ACCEPTED

LESSEE: LESSOR:

EXHIBIT “E”

Lessee’s Hazardous Materials

(See Attached)

PacBio Chemical Inventory

Chemical	Primary Hazard	Secondary Hazard	S,L,G	Initial Storage Qty (gal or lb)	Projected Qty (gal or lb)	Largest Container
Acetic Acid	Comb II	corrosive	L	3	3	0.67 gal
Acetic anhydride	Comb II	corrosive	L	1.25	1.25	0.25 gal
Acetonitrile 10% with TEAA	Comb II		L	2	4	2 gal
Diesel fuel in ext generator	Comb II		L	4000	4000	4000 gal
Formic acid	Comb II	corrosive	L	0.4	0.4	0.25 gal
Microposit-SC 1827	Comb II		L	0.8	1.8	0.5 gal
Misc liquids	Comb II		L	1	1	0.07 gal
N,N-Dimethylformamide	Comb II	corrosive	L	5.3	5.3	0.03 gal
Propionic acid	Comb II	corrosive	L	0.55	0.55	0.25 gal
waste Microposit	Comb II		L	35	65	10 gal
			Total Combustible Liquids II		4,000 gal + 82 gal	
1,2-Dichlorobenzene, anhydrous, 99%	Comb IIIA		L	0.52	0.52	0.25 gal
1-Methyl-2-pyrrolidone	Comb IIIA		L	1.4	1.40	.013 gal
Dimethyl sulfoxide	Comb IIIA		L	2.9	5.50	2.6 gal
Ethyl 2-methylacetoacetate	Comb IIIA		L	0.25	0.25	0.13 gal
Ethyl acetoacetate	Comb IIIA		L	0.4	0.40	0.25 gal
Misc. liquids	Comb IIIA		L	0.5	0.50	0.03 gal
N,N-Diethylaniline	Comb IIIA	tox	L	0.26	0.52	0.25 gal
N,N-Dimethylacetamide	Comb IIIA		L	0.5	0.50	0.03 gal
Tributylamine	Comb IIIA	Htox	L	0.32	0.32	0.07 gal
Triethanolamine	Comb IIIA		L	0.42	0.42	0.25 gal
			Total Combustible Liquids IIIA		10.3 gal	
Tetra(ethylene glycol)	Comb IIIB		L	0.26	0.26	0.26
UV Adhesive Norland 081	Comb IIIB		L	0.24	0.24	0.12 gal
Misc liquids	Comb IIIB		L	0.3	0.30	0.12 gal
			Total Combustible Liquids IIIB		0.8 gal	
Argon, Liquid	Cryogen		L	990	990	900 gal
Carbon dioxide, solid	Cryogen		S	5085	7345	1695 lb
Nitrogen, Liquid	Cryogen		L	7144	7144	6000 gal
			Total Cryogens		15,479 gal	
0.1% TFA in Water	Corrosive		L	1	3	1 gal
Albritect CP30	Corrosive		L	69	97	55 gal
Ammonia Solution, Strong	Corrosive		L	0.26	0.52	0.26 gal
Ammonium hydroxide	Corrosive		L	1.6	1.7	0.13 gal
Bromine liquid, 99.8%	Corrosive		L	0.26	0.26	0.03 gal
N-Bromosuccinimide	Corrosive		S	1.65	1.65	1.1 lb
6-Bromohexanoic acid	Corrosive		S	1.1	1.1	0.22 lb
cyanuric chloride	Corrosive		S	1.3	1.3	1.1 lb
Ethylenediamine Tetraacetic Acid, Tetrasodium Salt Dihydrate			S	1.1	1.1	1.1 lb
Guanidine hydrochloride Waste	Corrosive		L	35	35	30 gal
p-Hydrazinobenzenesulfonic Acid Hemihydrate	Corrosive		S	1.5	1.5	1.1 lb
Hydrochloric acid	Corrosive		L	6.2	7	0.67 gal
Imidazole	Corrosive		L	0.26	0.52	0.26 gal
Imidazole	Corrosive		S	2.2	2.2	1.1 lb
Jone's Reagent (Chromosulfuric Acid, 2%)	Corrosive		L	0.52	0.52	0.26 gal
Misc liquids	Corrosive		L	2	4	1 gal
Phosphoric acid	Corrosive		L	1.44	2.74	1.26 gal
Phosphorus (V) oxychloride	Corrosive		L	0.6	0.6	0.07 gal
Phosphorus pentoxide, powder, >=98%, A.C.S. rea	Corrosive		S	1.1	1.1	1.1 lb
Potassium hydroxide	Corrosive		L	2.97	3.26	0.67 gal
Potassium hydroxide	Corrosive		S	12.3	18	2.2 lb
Resorcinol	Corrosive		S	1.87	1.87	1.1 lb

EXHIBIT "E"

WEST\258445808.17

PacBio Chemical Inventory

Chemical	Primary Hazard	Secondary Hazard	S,L,G	Initial Storage Qty (gal or lb)	Projected Qty (gal or lb)	Largest Container
Sodium budulfite, granular	Corrosive		S	1.1	1.1	1.1 lb
Sodium hydroxide	Corrosive		L	6.25	12.5	4.2 gal
Sodium hydroxide	Corrosive		S	17	18	1.1 lb
Sodium hydroxide waste	Corrosive		L	25	60	5 gal
Sodium meta-Bisulfite, Granular	Corrosive		S	4.4	4.4	1.1 lb
Sulfuric acid	Corrosive		L	4.55	4.55	0.67 gal
Sulfuric acid, fuming	Corrosive	toxic	L	0.65	0.65	.013 gal
Tetrabutylammonium hydroxide solution	Corrosive		L	0.27	0.53	0.26 gal
Tin(II) chloride dihydrate, reagent grade	Corrosive		S	1.1	1.1	1.1 lb
Trifluoroacetic acid	Corrosive		L	0.72	0.72	0.03 gal
Zinc Chloride	Corrosive		S	1.56	1.56	1.1 lb
				Total Corrosives	217 gal + 56 lb	
				Total Corrosives including secondary hazards	257 gal + 60 lb	
Hydrogen	FL Gas		G	200	200	99 cf
Propane	FL Gas		G	426	426	35.5 lb
				Total Flammable Gas	626 cf	
Magnesium	Fl Solid	WR2	S	1	1.00	0.22 lb
Misch Metal	Fl Solid	WR2	S	2.2	2.20	1.1 lb
Potassium tert-butoxide	Fl Solid	corrosive	S	1.54	1.54	1.1 lb
Sodium hydrosulfite	Fl Solid		S	1.4	1.4	1.1 lb
tert-Butyldimethylsilyl chloride	Fl Solid	corrosive	S	1.4	1.4	1.1 lb
				Total Flammable Solids	7.5 lb	
Misc liquids	FL IA		L	0.55	0.55	0.13 gal
				Total Flammable Liquids 1A	0.6 gal	
0.1% TFA in Acetonitrile	FL IB	corrosive	L	5	11.50	4 gal
Acetone	FL IB		L	30	86	2.5 gal
Acetonitrile	FL IB		L	25	159	12.7 gal
Ethanol	FL IB		L	324	560	32 gal
Gel Stain/destain Waste	FL IB	toxic	L	20	35	5 gal
hexane	FL IB		13.5	13.5	64	12.7 gal
HPLC feed bottles	FL IB		L	43	46.5	2.5 gal
HPLC fractionation tray	FL IB		L	13	20	9.5 gal
HPLC waste	FL IB		L	795	900	55 gal
Isopropanol	FL IB		L	36	130	14.3 gal
Methanol	FL IB		L	30	112	13.7 gal
Misc liquids	FL IB		L	100	126	varies
Mixed solvent waste	FL IB		L	96	99	15 gal
Potassium tert-butoxide, 1.0M solution in 2-meth	FL IB	corrosive	L	0.4	0.4	0.21 gal
Pyridine	FL IB		L	1.5	1.5	0.25 gal
tert-Butanol	FL IB		L	0.75	0.75	0.25 gal
Toluene	FL IB		L	4.3	11	1.7 gal
Triethylamine	FL IB	corrosive	L	5.5	17	0.13 gal
				Total Flammable Liquids 1B	2379 gal	
1-Butanol	FL IC		L	1.5	5	1 gal
Chip Production waste	FL IC		L	35	65	5 gal
Misc liquids	FL IC		L	1	1	varies
				Total Flammable Liquids 1C	71 gal	
Misc liquids & solids	Highly toxic		L, S	0.6	0.6	varies
Sodium azide	Highly toxic		S	0.73	0.73	0.22 lb
				Total Highly toxics	1.35 lb	
				Total Highly toxics including secondary hazards	5 lb	

EXHIBIT "E"

PacBio Chemical Inventory

Chemical	Primary Hazard	Secondary Hazard	S,L,G	Initial Storage Qty (gal or lb)	Projected Qty (gal or lb)	Largest Container
Aluminum Nitrate Nonahydrate	OX2		S	1.1	1.1	1.1 lb
Misc materials	OX2		S,L	1	1	1.1 lb
Nitric acid	OX2		L	0.25	0.25	0.13 gal
Sodium nitrite	OX2	toxic	S	4.7	4.7	1.1 lb
				Total Oxidizer 2	7 lb	
Misc materials	OX3		S,L	1.4	1.4	0.22 lb
				Total Oxidizer 3	1.4 lb	
Hydrogen peroxide	OX4	corrosive	L	0.4	0.6	0.13 gal
Misc materials	OX4	corrosive	L	0.5	0.5	0.13 gal
				Total Oxidizer 4	1.1 lb	
Oxygen	OX gas		G	1757	1757	251 cf
				Total Oxidizing gases	1,757 cf	
Chloroform	Toxic		L	1.7	2.6	1 gal
Manganese(II) chloride, anhydrous	Toxic		S	1.1	1.1	1.1 lb
Misc materials	Toxic		L, S	1	2	varies
RCRA lab debris	Toxic		S	115	240	50 lb
Hexafluoropropene	Toxic		G	0.22	0.22	0.22 lb
				Total Toxics	246 lb	
				Total Toxics including secondary hazards	250 lb	
				Total Pyrophorics	0.55 lb	
				Total Water Reactive 2, including secondary hazards	3.77 lb	
Oxidizers, toxics and water-reactives are totalled in pounds, for both liquids and solids, as per Fire Code requirements.						
Materials present in quantities of less than 1 pound or 1 quart are not listed individually. These materials are accounted for in the "misc" line item by hazard class.						
Irritants and other materials not regulated by Fire Code not listed						

EXHIBIT "E"

EXHIBIT “F”
Work Letter
(See Attached)

EXHIBIT “F”

EXHIBIT “F”

WORK LETTER

1.General.

(a)The purpose of this Work Letter is to set forth (i) what work is to be performed by Lessor as part of the Warm Shell Work as described in Schedule “F-1” attached to this Work Letter, and the preliminary budget for the Warm Shell Work as set forth in Schedule “F-2” and (ii) certain information regarding the Market Ready Improvements and Tenant Improvements, including the space plans for the Market Ready Improvements and the Tenant Improvements in Schedule “F-3” attached to this Work Letter, and the preliminary combined budget and list of inclusions and exclusions for the Market Ready Improvements and Tenant Improvements in Schedule “F-4” attached to this Work Letter. Furthermore, this Work Letter (y) sets forth the mechanics for completion of the construction of the Warm Shell, Market Ready Improvements, and Tenant Improvements and (z) establishes a time schedule for Substantial Completion (as defined below in Paragraph 2(c)) of construction of the same (a preliminary construction schedule is attached hereto as Schedule “F-5”). The Warm Shell Work, Market Ready Improvements and Tenant Improvements are hereinafter collectively referred to as the “**Work**”.

(b)Except as defined in this Work Letter to the contrary, all terms utilized in this Work Letter shall have the same meaning ascribed to them in the Lease. When work, services, consents or approvals are to be provided by or on behalf of Lessor or Lessee, the term “Lessor” and “Lessee” shall include such parties’ employees and authorized agents.

(c)The provisions of the Lease, except where clearly inconsistent or inapplicable to this Work Letter, are incorporated into this Work Letter; provided, however, that the provisions of this Work Letter shall govern the Work rather than the provisions of Paragraph 15(d) of the Lease.

(d)The Market Ready Improvements and the Tenant Improvements shall be constructed pursuant to this Work Letter by (or on behalf of) Lessee, with the cost thereof to be shared by Lessor and Lessee as described in Paragraph 14 of the Lease.

(e)The Warm Shell Work shall be constructed pursuant to this Work Letter by (or on behalf of) Lessor, at Lessor’s sole cost and expense.

2.Design Period, Construction Period and Delivery.

(a)Delivery. Lessee shall be permitted Early Entry into the Premises prior to the Commencement Date in accordance with the terms and conditions set forth in Paragraph 2(f) of the Lease.

(b)Delay of Delivery.

(i)The parties shall attempt in good faith to resolve any dispute arising out of or relating to approval of the Tenant Improvement Documents (as defined in Paragraph 3(b) below) in accordance with the terms set forth in this Work Letter. If Lessee has not approved such documents by 5:00 pm Pacific Standard Time on the applicable date set forth in Paragraph 3(c) below, then within two (2) business days following such failure, both Lessor and Lessee shall provide the other with written notice (each such notice, a "**Design Dispute Notice**") that shall include with reasonable particularity (1) a statement of each party's position and a summary of arguments supporting that position and (2) the name and title of the executive who will represent that party and of any other person who will accompany the executive.

Within two (2) business days after the date required for delivery of the Design Dispute Notices, the designated executives of both parties shall meet at a mutually acceptable time and place. Unless otherwise agreed in writing by the negotiating parties, the above-described negotiation shall end at the close of the first meeting of executives described above (the "**First Meeting**"). Such closure shall not preclude continuing or later negotiations, if desired.

If the parties fail to resolve the dispute at this First Meeting, the parties shall initiate binding arbitration proceedings with an arbitrator experienced in resolving disputes related to the design of commercial properties (the "**Design Arbitrator**"), to be mutually agreed upon and retained by the parties in writing upon execution of this Lease or within twenty-one (21) days thereafter. If the parties fail to agree upon a Design Arbitrator within such twenty-one day period, either party may apply to the American Arbitration Association to appoint an Arbitrator, and the parties shall split all associated administrative fees from the American Arbitration Association and hereby consent to the jurisdiction of the American Arbitration Association for such purposes. The Design Arbitrator shall only have the authority to choose between the positions (including the amount of Tenant Delay and Lessor Delay) set forth in the Design Dispute Notices, as well as to determine the amount of Tenant Delay and Lessor Delay, which shall be equal to the number of days that elapse from the applicable Final Approval Date set forth in Paragraph 3(c) to the date that the dispute regarding the Tenant Improvement Documents is resolved by the Design Arbitrator. If the Design Arbitrator selects the Lessee's position, the delay shall be a Lessor Delay. If the Design Arbitrator selects the Lessor's position, the delay shall be a Tenant Delay. The Design Arbitrator shall render a decision within ten (10) business days following the conclusion of the First Meeting.

The parties agree to enter into a separate Agreement with the Design Arbitrator, which shall include the following provisions: the parties shall agree (i) to split equally all fees of the Design Arbitrator in connection with the Design Arbitrator's services, and payment of such fees to the arbitrator shall be enforceable by any court of competent jurisdiction; (ii) to the extent allowable under applicable law, to defend and indemnify (subject to Section 14 below), the Design Arbitrator from claims, damages or causes of action (including reasonable attorneys' fees) arising out of the parties' acts or omissions under this Lease or the acts or omissions of any contractor or design professional providing services or labor or materials in connection with the Work.

(ii)With respect to delays other than the delays described in subparagraph (i) above, no Lessor Delay or Tenant Delay shall be deemed to have occurred

hereunder or in the Lease unless and until the party claiming such a delay has provided written notice to the other party specifying the action or inaction that such notifying party contends constitutes a Lessor Delay or Tenant Delay, as applicable as soon as possible, but not later than three (3) business days after the occurrence of such delay. The Lessor Delay or Tenant Delay, as set forth in such notice, shall be deemed to have occurred commencing as of the date that the event triggering the delay occurred and continuing for the number of days the performance in question was in fact delayed as a direct result of such action or inaction, provided that the party claiming such delay exercises commercially reasonable efforts to mitigate, if reasonably possible, the delaying effect of the complained of action or inaction.

(c)Certain Definitions.

(i)Force Majeure Delay. The term "**Force Majeure Delay**" as used in the Lease or this Work Letter shall mean any delay in the performance of any act or thing required hereunder which is attributable to strikes, lock-outs, weather conditions, casualties, acts of God, labor troubles, inability by the exercise of reasonable diligence to procure materials, inability by the exercise of reasonable diligence to obtain supplies, parts, employees or necessary services, failure of power, governmental laws, orders or regulations, actions of governmental authorities, riots, insurrection, war or other causes beyond the reasonable control of such party, or for any cause due to any act or neglect of the other party hereto or its respective servants, agents, employees, licensees, or any person claiming by, through or under them.

(ii)Lessor Delay. The term "**Lessor Delay**" as used in the Lease or this Work Letter shall mean any delay in the Substantial Completion of the Work (as defined in Paragraph 2(c) below) in accordance with the timelines provided in the Construction Schedule attached hereto as Schedule "F-5", as the same may be adjusted by Change Order, to the extent due to (i) Lessor's failure to deliver the Tenant Improvement Documents by the dates set forth in Section 3(c) below and (ii) any Lessor Delay specified in this Work Letter or in the Lease, including, without limitation, any Lessor Delay agreed upon in writing following the First Meeting (defined above) or determined by the Design Arbitrator as set forth above.

(iii)Tenant Delay. The term "**Tenant Delay**" as used in the Lease or this Work Letter shall mean any delay in the Substantial Completion of the Work (as defined in Paragraph 2(c) below) in accordance with the timelines provided in the Construction Schedule attached hereto as Schedule "F-5", as the same may be adjusted by Change Order, to the extent due to (a) any material interference by Lessee with the work of the General Contractor or its subcontractors during Lessee's Early Entry; (b) a written Change Order (as defined below) requested by Lessee, but only to the extent of the Tenant Delay specified in such Change Order; (c) any Tenant Delay specified in this Work Letter or in the Lease, including, without limitation, any Tenant Delay agreed upon in writing following the First Meeting (defined above) or determined by the Design Arbitrator as set forth above; (d) the inclusion of any so-called "long lead" materials in the improvements (such as fabrics, paneling, carpeting or other items that are not readily available within industry standard lead times [e.g., custom made items that require time to procure beyond that customarily required for standard items, or items that are currently out of stock and will require extra time to back order] and for which suitable substitutes exist); provided, however, that if any such "long lead" item is not specified in the Schedules attached to

this Work Letter, its inclusion shall not constitute a Tenant Delay unless Lessor has notified Lessee that such item is a "long lead" item and has given Lessee a reasonable period of time to approve the inclusion of the item prior to the time at which it would delay Substantial Completion of the Work; (e) Lessee's failure to provide, within a reasonable period of time, information requested by Lessor that is reasonably necessary for the Substantial Completion of the Work; and (f) Lessee's failure to make any payment required under this Work Letter within the period specified therefor (it being acknowledged that if Lessee fails to make or otherwise delays making such payments, Lessor may stop work rather than incur costs which Lessee is obligated to fund but has not yet funded and any delay from such a work stoppage will be a Tenant Delay). Lessee shall be liable for, and shall pay all costs and expenses incurred by Lessor to the extent caused by a Tenant Delay.

(iv)Substantial Completion or Substantially Completed. Lessor's Work shall be "**Substantially Completed**" and Lessor shall have attained "**Substantial Completion**" of the Work when all of the Work is completed in accordance with the approved Documents and all requirements of Applicable Laws other than (i) non-material punch-list items, and (ii) Lessor has obtained a Temporary Certificate of Occupancy ("**TCO**") for the Premises or such other documentation from the City specifying that the Premises can be legally occupied. Notwithstanding the foregoing, Lessor shall promptly and diligently pursue the completion of all such non-material punch-list items within the Premises within a reasonable period of time.

3.Preparation of Plans and Construction Schedule and Procedures. Delivery of all plans and drawings referred to in this Section 3 shall be electronic, unless otherwise agreed by Lessor and Lessee. Lessor and Lessee shall arrange for the construction of the Work in accordance with the following schedule:

(a)Selection of Architect and Engineer. Subject to Lessee's approval, not to be unreasonably withheld, conditioned or delayed, Lessor shall select an architect ("**Designer**") and an engineer ("**Engineer**") familiar with all rules, regulations, instructions and procedures promulgated by Lessor with respect to design and/or construction in the Building (collectively, the "**Building Requirements**") and with all Applicable Laws. Lessee's failure to approve the selection of the Engineer or the Designer within three (3) business days of Lessor's delivery of written notice of such selection to Lessee shall be deemed Tenant Delay. Thereafter, Lessor shall engage and manage the Designer and Engineer.

If, following the engagement of the Designer or the Engineer, Lessor unilaterally decides to terminate either the Designer or the Engineer, any delay in the Substantial Completion of the Work caused by or attributable to such termination shall be deemed Lessor Delay. If, following the engagement of the Designer or the Engineer, Lessee unilaterally decides to direct Lessor to terminate either the Designer or the Engineer, any delay in the Substantial Completion of the Work caused by or attributable to such termination shall be deemed Tenant Delay. If Lessor and Lessee mutually decide to terminate the Designer or the Engineer, the parties shall execute a Change Order to revise the construction schedule to account for any delay in the Substantial Completion of the Work, and there shall be no Tenant Delay or Lessor Delay associated with such mutual termination.

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(b)Building Plans. Lessor shall cause the Designer to electronically submit to the Lessee the Schematic Design Documents, the Design Development Documents, and the Construction Documents for the Market Ready Improvements and the Tenant Improvements (collectively, the "**Tenant Improvement Documents**") by the dates set forth in Section 3(c) below. Lessor shall also cause Designer to electronically submit to Lessee the Schematic Design Documents, the Design Development Documents, and the Construction Documents for the Warm Shell Work when the same are available. Lessee shall have the right to review and approve the Tenant Improvement Documents; provided, however, that so long as the Tenant Improvement Documents are consistent with Schedule "F-3" and Schedule "F-4" attached to this Work Letter, Lessee's approval shall not be unreasonably withheld, conditioned, or delayed and such approval shall otherwise be given within the time frames in this Section 3. Prior to the approval dates set forth in Section 3(c) below, if Lessee requests that Lessor make any changes to the Tenant Improvement Documents, Lessee and Lessor shall work together in good faith to promptly agree upon any changes to the Tenant Improvement Documents necessary to cause the Tenant Improvement Documents to be consistent with Schedule "F-3" and Schedule "F-4" attached to this Work Letter, and any previously approved Tenant Improvement Documents.

(c)Final Approval of Documents. Provided that Lessor shall deliver to Lessee the Tenant Improvement Documents at least five (5) days in advance of the dates set forth below, Lessee shall approve the Tenant Improvement Documents by the dates set forth below ("**Final Approval Dates**"). Lessee's failure to approve the Tenant Improvement Documents by the applicable Final Approval Date shall be eligible for Tenant Delay as set forth in Section 2(b)(i) above and Lessor's failure to submit the Tenant Improvement Documents at least five (5) days in advance of the Final Approval Dates shall be eligible for Lessor Delay as set forth in Section 2(b)(i) above.

Tenant Improvement Document:	**Final Approval Date:**
Schematic Design Documents	July 20, 2015
Design Development Documents	August 19, 2015
Construction Documents	October 8, 2015

4.General Contractor and Review of Plans.

(a)Selection of General Contractor. Lessor intends to use ACT as a general contractor to construct the Work (the "**General Contractor**"), which was selected through a competitive bidding process. As soon as reasonably practicable, General Contractor shall cause to be prepared, and delivered to Lessor and Lessee, a cost estimate for the Work, separately identifying costs of (1) the Warm Shell Work, and (2) the Market Ready Improvements and the Tenant Improvements, collectively. Lessor and Lessee shall cooperate to achieve efficiencies in the cost of the Work and to value-engineer the cost of the Work and shall confer and negotiate in good faith to reach agreement on a Final Budget for the Work (such approved budget, the "**Final Budget**"). Lessor shall enter into a construction contract with the General Contractor (the "**Construction Contract**") in the amount of the Final Budget. Lessor shall provide Lessee with a copy of the proposed Construction Contract prior to execution for Lessee's approval and shall provide Lessee with a copy of the approved Construction Contract following execution thereof with General Contractor. Lessee's approval of the Construction Contract shall not be

unreasonably withheld, conditioned, or delayed. If Lessee objects to any term(s) of the proposed Construction Contract, Lessee shall promptly work with Lessor to resolve such concerns so as not to delay Substantial Completion of the Work. Lessee's failure to timely approve the Construction Contract shall be a Tenant Delay.

Notwithstanding the foregoing, Lessee shall have the right to direct Lessor in writing to terminate the General Contractor's work on the Market Ready Improvements and the Tenant Improvements and to select an alternate contractor to complete Market Ready Improvements and the Tenant Improvements, but shall have no right to direct Lessor to terminate the General Contractor's performance of the Warm Shell Work. Any delay in Substantial Completion of the Work caused by Lessee's exercise of this termination right, including without limitation delay caused by selection of an alternate contractor and/or delay caused by having two general contractors completing different portions of the Work, shall be deemed to be a Tenant Delay. In the event that Lessee elects to terminate the General Contractor, Lessee further agrees that it will reimburse or compensate Lessor for any liability, cost, expense, loss or damage (including attorneys' fees) which Lessor may suffer or incur by reason of Lessee's election to terminate the General Contractor, including without limitation Lessor's defense of a breach of contract action by the General Contractor for wrongful termination. Lessee further agrees that Lessee shall be solely responsible to reimburse Lessor for any increases in the costs to complete the Work due to Lessee's election to terminate the General Contractor.

(b)Lessor's Review Responsibilities. Lessee agrees and understands that the review of all of the plans pursuant to this Work Letter by Lessor is solely to protect the interests of Lessor in the Building and the Premises, and Lessor shall not be the guarantor of, nor responsible for, the correctness or accuracy of any such plans or compliance of such plans with Applicable Laws.

(c)Permits and Approvals. Lessee and Lessor shall cooperate in efforts to obtain all permits and approvals that may be required to construct the Work, and for Lessee to occupy the Premises (including all Critical Permits as defined in the Lease, which shall be obtained by Lessor).

5.Tenant Improvements. The term "**Tenant Improvements**" shall include, to the extent specified in the Tenant Improvement Documents, all signage, freestanding workstations, built-in related cabinets, reception desks, all telecommunication equipment and related wiring, and all carpets and floor coverings, but Tenant Improvements shall not include any personal property or trade fixtures of Lessee.

6.Construction of the Work. Promptly after Lessor and Lessee have approved the Tenant Improvement Documents and the Final Budget, the General Contractor shall (i) provide Lessor and Lessee with a construction schedule, which shall incorporate and include any of Lessee's subcontractors (including without limitation, furniture vendors, subcontractors for IT, cabling, AV and security), and (ii) commence construction of the Work. The Work shall be performed in a diligent, good and workman like manner using new materials. The Work shall comply in all respects with the following: (a) the City of Menlo Park Building Code and other state, federal, city or quasi-governmental laws, codes, ordinances and regulations, as each may

apply according to the rulings of the controlling public official, agent or other person; (b) applicable standards of the American Insurance Association (formerly, the National Board of Fire Underwriters) and the National Electrical Code; and (c) building material manufacturer's specifications. Lessee hereby acknowledges that the Lessor may be required to cause union only labor to be utilized on some portions of the Work, including, without limitation, mechanical, electrical and plumbing. At the conclusion of construction, the General Contractor and Designer shall notify Lessor and Lessee of the Substantial Completion of the Work. At the conclusion of construction, the General Contractor shall also deliver to Lessor (who shall deliver copies of the same to Lessee) (i) "As-Built" plans of the Work in hard copy together with a digital copy (in such commercially reasonable format as shall be designated by Lessor), and (ii) lien waivers/releases from the General Contractor and all of its sub-contractors reflecting that the cost of the Work has been paid in full.

7. Weekly Job Meetings. General Contractor shall conduct weekly job meetings on site. Lessor shall have the right, but not an obligation, to attend any job meeting. During each such job meeting the General Contractor shall among other things provide a report as to the construction and progress against the Tenant Improvement construction schedule.

8. Change Orders. In the event that Lessee desires to make any changes to the approved Tenant Improvement Documents, Lessee shall seek Lessor's prior written approval of any such changes before they are made and such changes, as well as any Tenant Delay resulting therefrom, must be identified in an approved written "Change Order" prior to proceeding with such changes.

Changes to the dates set forth in the construction schedule attached to this Work Letter as Schedule "F-5" shall also be done via a written Change Order approved by Lessor.

9. Lessee Work. All improvements or alterations constructed in the Premises by Lessee or Lessee's contractors prior to the Commencement Date shall be subject to the following requirements:

(a) Any such entry into the Premises by Lessee or Lessee's contractors shall be subject to the prior written consent of the Lessor, which consent may be withheld by Lessor in Lessor's sole discretion; provided, however, that Early Entry for the purposes set forth in Section 2(f) of the Lease shall be governed by that Section.

(b) Such work shall not proceed until Lessor has approved in writing (1) the amount and coverage of public liability and property insurance, with Lessor, its property manager and mortgagor named as additional insureds, carried by Lessee's contractor and (2) a schedule for the work.

(c) All work shall be done in conformity with a valid permit when required, a copy of which shall be furnished to Lessor before such work is commenced. In any case, all such work shall be performed in accordance with all Applicable Laws.

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10. Staging Area/Coordination of Efforts. Lessee shall cause its contractors and their subcontractors to schedule all deliveries to the Building with Lessor's designated project representative at such times as shall be reasonably directed by such designated representative. Lessee shall direct that its contractors and materialmen use only those areas outside of the Premises for staging and material assembly that are designated from time to time by Lessor's project representative. Lessee shall require that all of its contractors and materialmen use reasonable efforts to coordinate their activities within the Building and the Building site with Lessor's designated project representative so as to avoid when possible disruption to the Work or work of others within the Building.

11. Insurance Requirements. All contractors shall provide the following insurance coverages:

(a) General Coverages. General Contractor (and all sub-contractors) shall carry, to the extent required by law, worker's compensation insurance covering all of their respective employees, and shall also carry public liability insurance, including property damage, all with limits, in form and with companies as are required to be carried by Lessee as set forth in the Lease.

(b) Special Coverages. Lessor shall carry "Builder's All Risk" insurance in an amount reasonably approved by Lessor covering the construction of the Work and the premiums for such shall be included in the cost of construction. Such "Builder's Risk" insurance shall be in amounts and shall include such extended coverage endorsements as may be reasonably required by Lessor including, but not limited to, the requirement that the General Contractor and all sub-contractors shall carry excess liability and Products and Completed Operation Coverage insurance, each in amounts not less than $1,000,000 per incident, $3,000,000 in aggregate, and in form and with companies as are required to be carried by Lessee as set forth in the Lease.

Lessor shall carry property insurance for the Warm Shell Work, Market Ready Improvements, and Tenant Improvements. Lessee shall be responsible for carrying property insurance for any other alterations.

Lessor reserves the right to carry flood or earthquake insurance if Lessor, in its sole discretion, determines that such coverage is necessary.

(c) General Terms. Certificates for all insurance carried pursuant to this Paragraph 11 shall be delivered to Lessor before the commencement of construction of the Work and before the General Contractor's equipment is moved onto the site. All such policies of insurance must contain a provision that the company writing said policy will endeavor to give Lessor thirty (30) days prior written notice of any termination or lapse of the effective date or any reduction in the amounts of such insurance. In the event that the Work is damaged by any cause during the course of the construction thereof, Lessor shall promptly repair (or cause the same to be repaired) at no cost to Lessee. The General Contractor and all sub-contractors shall maintain all of the foregoing insurance coverage in force until the Work is fully completed. All policies carried under this Paragraph 11 shall insure Lessor and Lessee, as their interests may appear, as well as the General Contractor and sub-contractors. All insurance, except Workers'

Compensation, maintained by the General Contractor and all subcontractors shall preclude subrogation claims by the insurer against anyone insured thereunder. Such insurance shall provide that it is primary insurance as respects the owner and that any other insurance maintained by owner is excess and noncontributing with the insurance required hereunder. The requirements for the foregoing insurance shall not derogate from the provisions for indemnification of Lessor by Lessee under the Lease, as reaffirmed under Section 14 of this Work Letter.

(d)Casualties during Construction. Lessee shall carry insurance coverage for loss of use and business interruption caused by casualties that occur during construction, and Lessor shall have no liability to Lessee for loss of use or business interruption damages caused by casualties during construction. Lessor shall carry insurance coverage for lost rent caused by casualties that occur during construction, and Lessee shall have no liability to Lessor for lost rent damages caused by casualties during construction.

12.Warm Shell. Lessor shall construct the Warm Shell Work at Lessor's cost and expense. Lessor hereby agrees that the Warm Shell Work shall be constructed substantially in accordance with the material elements of the description of the Warm Shell Work attached as Schedule "F-1" to this Work Letter.

13.Delivery of Premises to Lessee and Condition of Premises. Lessor shall deliver possession of the Premises to Lessee subject punch list items, Force Majeure and Tenant Delays with the Work Substantially Completed at the time set forth in the Lease.

14. Construction Period Provisions. Lessor and Lessee agree that, notwithstanding anything in the Lease or this Work Letter to the contrary, the following provisions shall apply during the Construction Period (defined below):

(a)The parties acknowledge that the estimated costs to complete the Warm Shell Work, the Market Ready Improvements and the Tenant Improvements are currently $33,000,000 as set forth on the budgets attached hereto as Schedule "F-2" and Schedule "F-4". Lessor is responsible for paying the cost of the Warm Shell Work, estimated to be $11,400,000 as described on Schedule "F-2". Lessor is also responsible for funding the Lessor's Contribution (as defined in Paragraph 14(a) of the Lease) for the Market Ready Improvements in the amount of $9,900,000 and the Tenant Improvement Allowance (as defined in Paragraph 14(a) of the Lease) for the Tenant Improvements in the amount of $2,700,000. Lessee is responsible for reimbursing Lessor for the Tenant Improvement Shortfall (as defined in Paragraph 14(a) of the Lease), which amount is currently estimated to be $9,000,000. During the period from the Effective Date of this Lease through Substantial Completion of the Work (the "**Construction Period**"), the Lease also requires Lessee to prepay Base Rent in the amount of $2,160,000 and Additional Rent in the amount of $180,000 and deliver to Lessor a Security Deposit in the amount of $4,500,000 in the form of a Letter of Credit. Accordingly, Lessee's aggregate cash outlay during the Construction Period is expected to be $11,340,,000 compared with Lessor's total cash outlay of $24,000,000 and estimated total project costs of $33,000,000 (with Lessee's portion of such costs expected to be 34%, but such percentage will be reduced by the inclusion in Project Costs (defined below) of the portion of Lessor's acquisition costs for the Project

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attributable to the value of the Building). All of Lessee's cash outlays during the Construction Period are expected to be paid directly to Lessor.

(b)Lessor agrees that, during the Construction Period, the amount it collects from Lessee (estimated to be $11,340,000), together with the amount of any obligation of Lessee to indemnify Lessor for damage claims caused by or resulting from Lessee's own acts or failures to act related to completion of construction, which amounts shall calculated to include (i) the accreted value of any payments previously made by Lessee plus (ii) the present value of the maximum amount that Lessee could be required to pay as of that point in time (whether or not construction is completed) discounted at Lessee's incremental borrowing rate, shall not in any one instance exceed 89.9% of the project costs then incurred by Lessor at any time during the Construction Period (i.e., "**Project Costs**" shall be the sum of costs capitalized by Lessor under generally accepted accounting principles in connection with the Work (estimated to be $33,000,000), the portion of Lessor's acquisition costs for the Project attributable to the value of the Building and other costs related to the Property paid by Lessor to third parties other than lenders or owners of Lessor); provided, however, that to the extent any such amount or obligation would exceed 89.9% of the then incurred Project Costs and Lessee's obligation to make such payment or satisfy such obligation is not allowed because the foregoing threshold is exceeded, Lessee's payment obligations with respect thereto shall not be excused but shall be deferred until the 89.9% test is satisfied or the Construction Period ends, whichever is earlier. Lessor further agrees that during the Construction Period, the Tenant Improvement Shortfall shall not be applied to any structural improvements to the Building, utility or insurance costs of Lessor, or costs that are general in nature (as opposed to costs specific to Lessee's requirements), which costs will be paid for by Lessor as part of Lessor's estimated contribution to the project costs. The Tenant Improvement Shortfall, estimated at $9,000,000, shall only be directed toward improvements that are specific to Lessee's requirements. Consistent with the foregoing, Lessee may request from Lessor from time to time Lessor's certification as to the current amount of the total Project Costs incurred to date at that time and that the amounts paid or to be paid by Lessee are not reimbursement for the items prohibited by this clause, and Lessor shall endeavor to provide supporting documentation upon Lessee's reasonable request for purposes of determining Lessee's accounting treatment.

(c)Lessor agrees that, during the Construction Period, with respect to any indemnity obligation of Lessee arising at any time during the Construction Period, (i) the term "Lessor" shall mean and shall be limited to Menlo Park Portfolio II, LLC (or any entity that that succeeds to Menlo Park Portfolio II, LLC's interest as Lessor under the Lease) and shall not include any other person or entity; provided, however, that Lessor may include in any claim owed by Lessee to Lessor any amount which Lessor shall pay or be obligated to indemnify any other person or entity, and (ii) any such indemnity obligation shall be limited to damage claims caused by or resulting from Lessee's or its agent's own acts or failures to act. In addition, Lessor agrees that, during the Construction Period, Lessor shall only draw upon the Letter of Credit for actual damages incurred by Lessor caused by or resulting from Lessee's or its agent's own acts or failures to act.

EXHIBIT "F"

SCHEDULE “F-1”

Description of Warm Shell Work

1315 O’BRIEN DRIVE
WARM SHELL DEFINITION

1. **THE BASE SITEWORK / BUILDING**

1315 O’Brien Drive is an existing building that will be renovated.

1.1. **Sitework:** The existing site will include new asphalt paving and striping in some areas as well as renovated landscape areas on the southern, O’Brien Drive, street frontage. New site signage will be installed as required by current T24 and ADA accessibility standards. A total of 366 parking spaces will be associated with the R&D building.

1.2. **Building:** The base building is an existing 2-story building that will be renovated both inside and outside. Interior demolition will consist of clearing the space of any and all office finishes, including ceilings, carpeting, interior walls, demolishing all existing bathrooms and bringing the space to a cold shell level. This demolition will also include removal and reuse of existing HVAC units and unused MEP infrastructure back to its source currently supporting the building. Exterior demolition will consist removing the center portion of the southern wall of the building, allowing the construction of a new 2-story lobby/entry way with an open stairway to the second floor. All shell interior construction will be designed to allow for expansion for future tenants improvements.

1.3. The building will be renovated, providing a “warm shell”, construction Type III-B building with the envelope, structure, building core (including elevators, stairs and restrooms), interior finishes, mechanical, electrical and safety systems as described below.

2. **ENVELOPE**

The building is to be fully enclosed and watertight.

2.1. Exterior walls are constructed of concrete, metal panels, glass and aluminum punched windows and storefront glazing systems.

2.2. Windows and glazing systems to use high-performance, low-e, insulated glass.

2.3. Roofing is an existing single-ply membrane, installed in 2011.

2.4. Exterior architectural building elements and finishes may include architectural steel, metal panels, painted / textured concrete, canopies, trellises and sunshade / light shelf devices.

3. **BUILDING STRUCTURE**

The existing building was designed per the seismic standards of the 1979 Uniform Building Code. The lateral load resisting system will be voluntarily upgraded per Chapter 34 Section 3404.5 of the 2013 California Building Code

3.1. Building configuration is partial 2 stories, above grade with floor to floor height of 15’6”+- in the 2 story areas and 31’0”+- in the high bay areas.

3.2. The primary building structure is constructed of tilt-up concrete panels ranging 6.25” – 10” thick with a lateral system of concrete shear walls and steel braced frames. The steel structure includes columns, steel trusses, steel roof deck, and raised equipment platform above roof. The roof platform will be 8,000 SF (approx), located near Column lines D-H and column line 4-6 and will have sufficient load carrying capacity for evaporative mechanical equipment totaling 300 tons of cooling capacity.

SCHEDULE “F-1”

3.3. The foundation system of the building consists of perimeter spread footings and concrete column pads.
3.4. The first level reinforced concrete slab-on-grade is 8" thick.
3.5. The second floor slab is a 5" thick concrete filled metal deck supported by steel beams and trusses. It is designed for up to 150 psf live load.
3.6. The roof structure is a metal deck supported by steel beams and trusses.
3.7. Steel interior tube columns vary in size from 6"x6" up to 10"x10" square. They are predominantly located on a +/- 40'x40' column grid layout and at +/- 20'x40' at the 2 story areas.
3.8. A new approximately 8000 square foot structural steel roof equipment platform will be placed above the existing roof structure above the existing second floor mezzanine and will support new HVAC units. Roof screens will be attached around the perimeter of the platforms to block the roof equipment from "line-of-sight".
3.9. Exterior walls are constructed of concrete, metal panels, glass and aluminum punched windows and storefront glazing systems.
3.10. The primary structural frame, exterior bearing walls, interior bearing walls and floor construction with associated secondary members will be fire rated construction as required for the proposed warm shell build out.
3.11. Roof construction and associated secondary members to be fire rated construction as required for the proposed warm shell build out.
3.12. Stair and mechanical shaft enclosures to be fire rated construction as required for the proposed warm shell build out.

4. **BUILDING CORE**

The building has common and core areas included in the base building and will incorporate elevators, stairs, main lobby, restrooms, janitor closets, MPOE for utilities, mechanical shafts and fire sprinkler riser rooms.
4.1. **Elevators:** Two (2) elevators will be provided. The first being an electric track system similar to Kone "Ecospace". The other elevator will be a hydroelectric freight elevator with a 1,500lb capacity (minimum). These elevators will serve 2 levels: first level and second level only.
4.2. **Stairs:** Three (3) stairwells will be provided to accommodate code required exiting for undivided tenant spaces. Stairwell enclosure finishes include painted walls, building standard doors and exposed concrete floors. Lighting, fire protection, code required signage and other infrastructure systems to be installed as required.
4.3. **Main Lobby:** The main lobby is a two-story atrium with a glass, 2-story glazed storefront entrance system that opens to the front plaza. The lobby stair will also have a steel and cable or glass handrail system.
4.4. **Restrooms:** Two (2) main restroom cores will be fully finished and functional, one on each floor level. Finishes to include: 4.1.1. Ceramic tile on floors and 'wet' walls
4.4.1. Solid surface countertops
4.4.2. Laminate toilet partitions

4.4.3. Stainless steel accessories
4.4.4. Finished ceiling systems and lighting
4.4.5. Plumbing Fixtures to include: 4.1.6.1. (24) Water Closets (Floor Mounted)
4.4.5.1. (6) Urinals
4.4.5.2. (25) Lavatories
4.4.5.3. (8) Showers

4.5. **Janitor's Closets:** Restrooms to include janitor/storage closet on each floor level.

4.6. **Main Electrical Room:** The main electrical room /MPOE will have a minimum of two services totaling 5000 amps. All services will be 277/480 VAC, three phase, four wire electrical services. Lighting and distribution panels will be installed for building core elements.

4.7. **Telephone / Data Closet:** A telephone / data closet will be provided on the ground floor.

5. **INTERIOR FINISHES**

5.1. The main building lobby may incorporate concrete, glass, stone, wood, steel and other materials consistent with a class A office building.

5.2. Interior surfaces of the exterior building walls will be exposed glass/aluminum, painted concrete or insulated furred walls as required to meet minimum title 24 energy compliance standards for the base building shell. Painted gypsum board, taped and finished, and other interior finishes are excluded from warm shell and will be a part of tenant improvements.

5.3. Interior gypsum wallboard or shaft wall at core elements to be provided with paint finish and fire-taped as required.

5.4. Restrooms to be completely finished out as described above.

5.5. No ceilings are to be installed except in restrooms (gypsum board) and main building lobby the extent of which is to be determined.

6. **MECHANICAL**

Operational heating, ventilation and air conditioning systems will provide conditioned air to all core element areas as required by code.

6.1. Mechanical plant designed to exceed Title 24 standards.

6.2. All finished core and lobby areas will have a completed mechanical system per Landlord's minimum HVAC criteria.

6.3. Mechanical systems to be evaporative based units, 360 ton minimum capacity with the capability of future expansion by tenant. DDC Building Management System to be provided and function to control base building systems. Tenant will be allowed to install connectivity to the DDC for improved operational and energy efficiency integration. Where appropriate based on building height, as required by code life safety smoke control systems including stair and vestibule pressurization fans, ducting, shafts and floor by floor smoke control through dedicated fan systems or through the central air conditioning systems.

SCHEDULE "F-1"

6.4. The natural gas supply to the building will be metered separately for the warehouse and R&D tenant.

7. **ELECTRICAL**

Fully operational main electric service including main switchboard to serve base building shell lighting, power loads and base building electrical, mechanical and equipment loads.

7.1. The MPOE will have a minimum of two services totaling 5000 amps. All services will be 277/480 VAC, three phase, four wire electrical services. A minimum of 4000 amps at 277/480 VAC, three phase, four wire electrical service will be provided for the R&D portion of the building.

7.2. Lighting will be installed in improved areas to meet local building codes and new Title-24 requirements. Fire alarm will be design & installed in accordance with local codes.

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8. **SAFETY AND SECURITY**

Fully operational life safety and access systems for building shell.

8.1. Base building is to be fully sprinklered and monitored as required by current building and fire codes. Fire sprinkler riser and wet sprinkler systems are provided for an undivided occupancy with upturned heads, typical.

8.2. Life safety system distribution (smoke detectors, annunciators, strobes, etc.) as required by code for core and common areas.

8.3. Lobby and other designated entrances will be equipped with card reader access with a minimum of four total perimeter doors.

8.4. An emergency generator will be provided to support Fire and Life Safety systems.

9. **MISCELLANEOUS**

9.1. Base building to be compliant with applicable building codes, including Title 24 and ADA requirements.

9.2. Exterior plazas to include paving systems, seating, landscaping, irrigation and lighting.

9.3. Bicycle lockers and bike racks to be provided.

9.4. Men’s and Women’s locker and shower facilities to be provided on first floor of the building.

9.5. Base Building shall include all common area facilities, including; loading areas, main telecommunications point of entry (MPOE) room, transformer, main switch gear room and other facilities required to service the entire building shell. All such rooms to be complete and operational.

SCHEDULE “F-1”

SCHEDULE “F-2”
Preliminary Budget for Warm Shell Work

[***]

SCHEDULE “F-2”

SCHEDULE “F-3”
Space Plans for Market Ready Improvements and Tenant Improvements

[***]

SCHEDULE “F-4”

Preliminary Combined Budget and List of Inclusions and Exclusions for Market Ready Improvements and Tenant Improvements

[***]

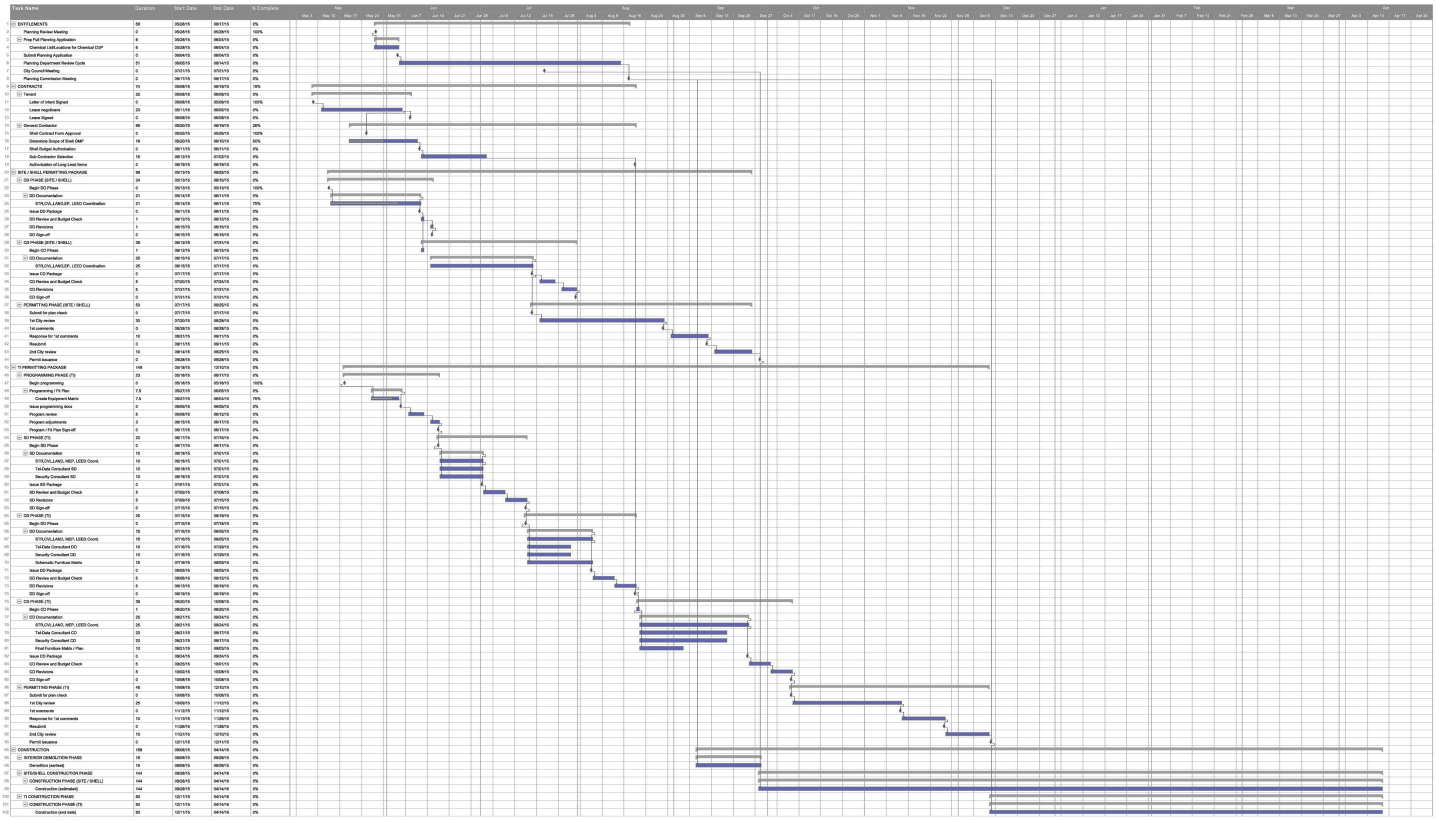
SCHEDULE “F-5”
Construction Schedule
Attached.

Exhibit “F”

1315 O'Brien Project Schedule v2.1.0

TARLTON

DRAFT



	Task Name	Duration	Start Date	End Date	% Complete
1	ENTITLEMENTS	59	05/26/15	08/17/15	0%
2	Planning Review Meeting	0	05/26/15	05/26/15	100%
3	Prep Full Planning Application	6	06/29/15	06/04/15	0%
4	Chemical List/Locations for Chemical CUP	6	06/29/15	06/04/15	0%
5	Submit Planning Application	0	06/04/15	06/04/15	0%
6	Planning Department Review Cycle	51	06/05/15	08/14/15	0%
7	City Council Meeting	0	07/21/15	07/21/15	0%
8	Planning Commission Meeting	0	08/17/15	08/17/15	0%
9	CONTRACTS	75	05/08/15	08/19/15	19%
10	Tenant	22	05/08/15	06/08/15	0%
11	Letter of Intent Signed	0	05/08/15	05/08/15	100%
12	Lease negotiations	22	05/11/15	06/05/15	0%
13	Lease Signed	0	06/08/15	06/08/15	0%
14	General Contractor	66	05/20/15	08/19/15	26%
15	Shell Contract Form Approved	0	05/20/15	05/20/15	100%
16	Determine Scope of Shell GMP	16	05/22/15	06/12/15	50%
17	Shell Budget Authorization	0	06/11/15	06/11/15	0%
18	Sub-Contractor Selection	16	06/12/15	07/02/15	0%
19	Authorization of Long Lead Items	0	08/19/15	08/19/15	0%
20	SITE / SHELL PERMITTING PACKAGE	98	05/13/15	09/25/15	0%
21	DD PHASE (SITE / SHELL)	24	05/13/15	06/15/15	0%
22	Begin DD Phase	0	05/13/15	05/13/15	100%
23	DD Documentation	21	05/14/15	06/11/15	0%
24	STR,CVL,LAN,ELEP, LEED Coordination	21	05/14/15	06/11/15	70%
25	Issue DD Package	0	06/11/15	06/11/15	0%
26	DD Review and Budget Check	1	06/12/15	06/12/15	0%
27	DD Revisions	1	06/15/15	06/15/15	0%
28	DD Sign-off	0	06/15/15	06/15/15	0%
29	CD PHASE (SITE / SHELL)	36	06/12/15	07/31/15	0%
30	Begin CD Phase	1	06/12/15	06/12/15	0%
31	CD Documentation	25	06/15/15	07/17/15	0%
32	STR,CVL,LAN,ELEP, LEED Coordination	25	06/15/15	07/17/15	0%
33	Issue CD Package	0	07/17/15	07/17/15	0%
34	CD Review and Budget Check	6	07/20/15	07/28/15	0%
35	CD Revisions	6	07/27/15	07/31/15	0%
36	CD Sign-off	0	07/31/15	07/31/15	0%
37	PERMITTING PHASE (SITE / SHELL)	50	07/17/15	09/25/15	0%
38	Submit for plan check	0	07/17/15	07/17/15	0%
39	1st City review	35	07/20/15	08/28/15	0%
40	1st comments	0	08/28/15	08/28/15	0%
41	Response for 1st comments	10	08/31/15	09/11/15	0%
42	Resubmit	0	09/11/15	09/11/15	0%
43	2nd City review	10	09/14/15	09/25/15	0%
44	Permit issuance	0	09/28/15	09/28/15	0%
45	TI PERMITTING PACKAGE	109	05/16/15	12/10/15	0%
46	PROGRAMMING PHASE (TI)	23	05/16/15	06/17/15	0%
47	Begin programming	0	05/16/15	05/16/15	100%
48	Programming / TI Plan	7.5	05/27/15	06/05/15	0%
49	Create Equipment Matrix	7.5	05/27/15	06/04/15	70%
50	Issue programming docs	0	06/05/15	06/05/15	0%
51	Program review	5	06/08/15	06/12/15	0%
52	Program adjustments	3	06/15/15	06/17/15	0%
53	Program / TI Plan Sign-off	0	06/17/15	06/17/15	0%
54	SD PHASE (TI)	20	06/17/15	07/16/15	0%
55	Begin SD Phase	0	06/17/15	06/17/15	0%
56	SD Documentation	15	06/18/15	07/07/15	0%
57	STR,CVL,LAN,D, MEP, LEED Coord.	15	06/18/15	07/07/15	0%
58	Tel,Data Consultant SD	10	06/18/15	07/01/15	0%
59	Security Consultant SD	10	06/18/15	07/01/15	0%
60	Issue SD Package	0	07/01/15	07/01/15	0%
61	SD Review and Budget Check	5	07/02/15	07/08/15	0%
62	SD Revisions	5	07/09/15	07/15/15	0%
63	SD Sign-off	0	07/15/15	07/15/15	0%
64	DD PHASE (TI)	26	07/15/15	08/19/15	0%
65	Begin DD Phase	0	07/15/15	07/15/15	0%
66	DD Documentation	15	07/16/15	08/05/15	0%
67	STR,CVL,LAN,D, MEP, LEED Coord.	15	07/16/15	08/05/15	0%
68	Tel,Data Consultant DD	10	07/16/15	07/29/15	0%
69	Security Consultant DD	10	07/16/15	07/29/15	0%
70	Submittals: Furniture Matrix	15	07/16/15	08/05/15	0%
71	Issue DD Package	0	08/05/15	08/05/15	0%
72	DD Review and Budget Check	5	08/06/15	08/12/15	0%
73	DD Revisions	5	08/13/15	08/19/15	0%
74	DD Sign-off	0	08/19/15	08/19/15	0%
75	CD PHASE (TI)	36	08/20/15	10/08/15	0%
76	Begin CD Phase	1	08/20/15	08/20/15	0%
77	CD Documentation	25	08/21/15	09/24/15	0%
78	STR,CVL,LAN,D, MEP, LEED Coord.	25	08/21/15	09/24/15	0%
79	Tel,Data Consultant CD	20	08/21/15	09/17/15	0%
80	Security Consultant CD	20	08/21/15	09/17/15	0%
81	Final Furniture Matrix / Plan	10	08/21/15	09/03/15	0%
82	Issue CD Package	0	09/24/15	09/24/15	0%
83	CD Review and Budget Check	5	09/25/15	10/01/15	0%
84	CD Revisions	6	10/02/15	10/08/15	0%
85	CD Sign-off	0	10/08/15	10/08/15	0%
86	PERMITTING PHASE (TI)	45	10/09/15	12/10/15	0%
87	Submit for plan check	0	10/09/15	10/09/15	0%
88	1st City review	25	10/09/15	11/12/15	0%
89	1st comments	0	11/12/15	11/12/15	0%
90	Response for 1st comments	10	11/13/15	11/26/15	0%
91	Resubmit	0	11/26/15	11/26/15	0%
92	2nd City review	10	11/27/15	12/10/15	0%
93	Permit issuance	0	12/11/15	12/11/15	0%
94	CONSTRUCTION	158	09/08/15	04/14/16	0%
95	INTERIOR DEMOLITION PHASE	15	09/08/15	09/28/15	0%
96	Demolition (earliest)	15	09/08/15	09/28/15	0%
97	SITE/SHELL CONSTRUCTION PHASE	144	09/28/15	04/14/16	0%
98	CONSTRUCTION PHASE (SITE / SHELL)	144	09/28/15	04/14/16	0%
99	Construction (estimated)	144	09/28/15	04/14/16	0%
100	TI CONSTRUCTION PHASE	80	12/11/15	04/14/16	0%
101	CONSTRUCTION PHASE (TI)	80	12/11/15	04/14/16	0%
102	Construction (end date)	80	12/11/15	04/14/16	0%

Exhibit “F”

EXHIBIT “G”

Lessee’s Property

- Card access system including panels, card readers, door proximity readers - interior
- Security cameras and system
- EHS equipment AED, fire extinguishers, first aid kits, spill, kits, signage, Eye washes, showers
- AV equipment
- White boards
- Cold rooms and refrigeration systems
- Pre-action fire system, tanks, panels and monitor
- Liquid Nitrogen tank and evaporator
- Air compressors
- Racks and warehouse shelves
- DI water system – excluding distribution
- Hard-wall office furniture (all items)
- Free-standing open office furniture components where viable and not tied down (file cabinets, bookshelves, credenzas); and workstations
- Conference room tables
- Office chairs including conference rooms, break areas, etc.
- Lab space components where viable and not anchored (i.e., free-standing tables, glass ware cabinets, flammable storage/chemical cabinets, all lab stools, etc.)
- Non built-in lab, office and lunch/break room equipment
- Lobby Desks
- Autoclave
- Fume, Bio and Laminar flow hoods
- Emergency generator and transfer switch

Exhibit 10.19

CERTAIN INFORMATION IN THIS EXHIBIT IDENTIFIED BY [***] IS CONFIDENTIAL AND HAS BEEN EXCLUDED BECAUSE (I) IT IS NOT MATERIAL AND (II) THE REGISTRANT CUSTOMARILY AND ACTUALLY TREATS THAT INFORMATION AS PRIVATE OR CONFIDENTIAL.

FIRST AMENDMENT TO LEASE

THIS FIRST AMENDMENT TO LEASE (this "Amendment") is made as of December 23, 2016 (the "Effective Date"), by and between MENLO PARK PORTFOLIO II, LLC, a Delaware limited liability company ("Lessor") and PACIFIC BIOSCIENCES OF CALIFORNIA, INC., a Delaware corporation ("Lessee").

RECITALS

A. Lessor and Lessee entered into that certain Lease, dated as of July 22, 2015 (the "Lease"), pertaining to the premises located at 1315 O'Brien Drive, Menlo Park, California (the "Premises").

B. Lessor and Lessee desire to amend the Lease as set forth herein. Unless otherwise defined herein, all capitalized terms in this Amendment shall have the same meaning ascribed to them in the Lease.

TERMS AND CONDITIONS

In consideration of the mutual covenants herein contained, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Lessor and Lessee agree as follows:

1. Premises; Building. The Lease defined the Premises as a portion of the Building consisting of approximately One Hundred Eighty Thousand (180,000) rentable square feet, as shown on the floor plan of the Building attached to the Lease as Exhibit "C." As contemplated in the Lease, Lessor has re-measured the Building and the Building is equal to approximately One Hundred Ninety Thousand Three Hundred Eighty Nine (190,389) rentable square feet. Paragraph 1 of the Lease is hereby amended to define the Premises as the portion of the Building consisting of approximately 180,231 rentable square feet, as shown on the floor plan attached hereto as Exhibit "A". The floor plan attached to the Lease as Exhibit "C" is hereby deleted and replaced with the floor plan attached hereto as Exhibit "A".

2. Commencement Date; Substantial Completion Date. Subject to the provisions of this Amendment, the initial Term of the Lease commenced on October 25, 2016 (the "Commencement Date"), and shall expire on October 31, 2027. Notwithstanding the foregoing, Lessor and Lessee acknowledge that, as of the date of this Amendment, (i) a portion of the Premises (the "Construction Area") has not been delivered to Lessee, (ii) Lessor has not obtained a TCO as to the Construction Area and (iii) the Work is not yet Substantially Completed. Accordingly, Lessor remains obligated to cause the Work to be Substantially Completed, to deliver the Construction Area to Lessee in the required condition and to obtain a final TCO as to the Construction Area (the date Lessor causes all of the foregoing to be satisfied is referred to herein and in the Lease as the "Substantial Completion Date"). Pursuant to Paragraph 14(b) of the Lease, as modified herein, Lessor agrees to (i) use reasonable efforts to assign any assignable warranties or guaranties provided by the contractors or manufacturers of equipment to be maintained by Lessee pursuant to Paragraph 15 (if any) provided as part of the Work to Lessee or, at Lessee's option, to enforce same with respect to any defect discovered in such equipment within one (1) year after the Substantial Completion Date and (ii) to enforce all other warranties or guaranties with respect to any defect discovered in the Work

within one (1) year after the Substantial Completion Date. The parties hereby agree and acknowledge that subject to the waiver of subrogation set forth in Paragraph 12(c) of the Lease and to Section 14 of the Work letter, the indemnification obligations of Lessee and Lessor shall be as set forth in Paragraph 13 of the Lease. Notwithstanding anything to the contrary in the Lease or this Amendment, Lessee shall not be liable or responsible for any injury or damages (including attorneys' and consultants' fees) of any type or nature, arising from any occurrence or cause within the Construction Area prior to the Substantial Completion Date, except to the extent such injury or damage is caused by Lessee or Lessee's employees, agents or contractors.

3. Additional Rent. The term "Commencement Date" appearing in the first sentence of Paragraph 6(a) of the Lease and the second sentence of Paragraph 6(e) is hereby deleted and replaced with "December 15, 2016" so that Lessee's obligation to commence paying Additional Rent to Lessor commenced as of December 15, 2016.

4. Monthly Base Rent. The chart in Paragraph 5(a) of the Lease is hereby deleted in its entirety and replaced with the following chart:

Months	Square Feet	$/SF/Mo./NNN	Monthly Base Rent
Rent Commencement Date -12	180,231	$2.996	$540,000.00*
13-24	180,231	$3.145	$567,000.00
25-36	180,231	$3.196	$576,000.00
37-48	180,231	$3.246	$585,000.00
49-60	180,231	$3.346	$603,000.00
61-72	180,231	$3.45	$621,000.00
73-84	180,231	$3.55	$639,000.00
85-96	180,231	$3.645	$657,000.00
97-108	180,231	$3.745	$675,000.00
109-120	180,231	$3.845	$693,000.00
121-132	180,231	$3.945	$711,000.00

5. Monthly Base Rent Credit; Additional Credit. Pursuant to Paragraph 2(c)(i) of the Lease, Lessee is entitled to receive a credit towards Monthly Base Rent next coming due under the Lease in an amount equal to One Hundred Seventy Seven Thousand Five Hundred Thirty Four and 25/100 Dollars ($177,534.25), which amount is equal to ten (10) days of Monthly Base Rent. Notwithstanding anything to the contrary in the Lease, if the Substantial Completion Date has not occurred by January 31, 2017 (the "Second Abatement Trigger Date"), then Lessee shall be entitled to receive a credit towards Monthly Base

Rent next coming due under the Lease in the amount of $ 17,753.42 per day for each day beyond the Second Abatement Trigger Date until the Substantial Completion Date occurs.

6. Insurance. Paragraph 12(a) of the Lease is hereby amended to provide that Lessee shall, at Lessee's sole cost and expense, provide and keep in force the insurance policies described in Paragraph 12 commencing as of December 31, 2016. In addition, the requirement of Lessee to provide property insurance in clause (ii) of Paragraph 12(a) is hereby amended to require Lessee to provide such property insurance as to alterations by Lessee in the Premises and as to alterations made by Lessor in the Premises after the Substantial Completion Date.

7. Warranties and Guaranties. The last sentence of Paragraph 14(b) of the Lease is deleted in its entirety and replaced with the following language,

"Lessor agrees to (i) use reasonable efforts to assign any assignable warranties or guaranties provided by the contractors or manufacturers of equipment to be maintained by Lessee pursuant to Paragraph 15 (if any) provided as part of the Work to Lessee or, at Lessee's option, to enforce same with respect to any defect discovered in such equipment within one (1) year after the Substantial Completion Date and (ii) to enforce all other warranties or guaranties with respect to any defect discovered in the Work within one (1) year after the Substantial Completion Date.

8. Maintenance and Repairs. The second full paragraph of Paragraph 15(c) of the Lease is hereby deleted in its entirety and replaced with the following language,

"If at any time after the first (1st) anniversary of the Substantial Completion Date, Pacific Biosciences of California, Inc. (the named tenant hereunder) (i) assigns this Lease by operation of law or otherwise other than to a Permitted Transferee, (ii) fails to provide copies of all service contracts and all service, maintenance, repair and replacement records (whether performed by Lessee's trained and certified personnel or by outside vendors) with respect to Systems Repairs required to be performed by Lessee in the Premises to Lessor on a timely basis, without necessity of request therefor, (iii) fails to require that all vendors maintain insurance reasonably satisfactory to Lessor naming Lessor and the Additional Insureds named in Paragraph 12 as "Additional Insured", (iv) fails to perform the Systems Repairs in accordance with the provisions of this Paragraph 15, (v) fails to provide such service, maintenance, repair or replacement at quality and frequency levels at least equal to the quality and frequency levels Lessor would maintain if it were providing such services (as evidenced by Lessor's maintenance of the balance of the Menlo Business Park), or (vi) fails to satisfy any of the Maintenance Requirements, and following such breach Lessee fails to commence a cure of any breach of the obligations set forth in (ii), (iii), (iv), (v) or (vi) within five (5) business days after receipt of written notice from Lessor and, thereafter, to diligently prosecute the cure to completion three (3) or more times in a twelve (12) month period then, the Parties agree that Lessor may, in its discretion, elect to assume or resume responsibility for maintenance, repair and replacement of the systems described in Paragraph 15(b)(i) and (ii), above, and include the cost in Operating Expenses as provided in Paragraph 6, subject to the provisions of Paragraph 6. Notwithstanding the cure period set forth in the immediately preceding sentence, the parties hereby agree and acknowledge that if Lessee fails more than once in a twelve (12) month period to cure a breach of any of the obligations set forth in (ii), (iii), (iv), (v) or (vi) within a reasonable time after receipt of written notice from Lessor, then Lessor may elect to assume or resume responsibility for maintenance, repair and replacement of the systems as set forth herein. Any such election by Lessor shall be effective immediately upon written notice to the Lessee of Lessor's intent to assume or resume such service, maintenance, repair and replacement. Any Lessor notice referred to above must set forth in reasonable detail the nature and extent of the failure referencing pertinent Lease provisions."

9. Maintenance Programs and Procedures. The second sentence of the third paragraph of Paragraph 15(c) is hereby deleted in its entirety and replaced with the following language,

"Lessee agrees to provide Lessor with a copy of Lessee's internal maintenance programs and procedures within one hundred eighty (180) days of the Commencement Date hereof, and again at any time upon receipt of Lessor's request therefor."

10. Surrender/Restoration. Paragraph 15(h) of the Lease is hereby amended to provide that the state of repair for purposes of determining Lessee's obligation to surrender the Premises shall not be as of the Commencement Date, but rather the state of repair existing as of Substantial Completion Date.

11. Additional Modifications to the Lease. The Lease is further modified as follows:

(a) The term "Commencement Date" in Paragraph 6(d)(10) of the Lease is hereby replaced with the term "Substantial Completion Date", as defined in this Amendment.

(b) The term "Commencement Date" in first sentence of Paragraph 23 of the Lease is hereby replaced with the term "Substantial Completion Date", as defined in this Amendment.

12. Continuing Effect. All of the terms and conditions of the Lease shall remain in full force and effect, as the Lease is amended by this Amendment.

13. Conflicts. If any provision of this Amendment conflicts with the Lease, the provisions of this Amendment shall control.

14. Warranty of Authority. Each party represents and warrants to the other that the person signing this Amendment is duly and validly authorized to do so on behalf of the entity it purports to so bind, and if such party is a limited liability company or a corporation, that such limited liability company or corporation has full right and authority to enter into this Amendment and to perform all of its obligations hereunder and that it has obtained all necessary consents and approvals to enter into this Amendment.

15. Effectiveness. No binding agreement between the parties pursuant hereto shall arise or become effective until this Amendment has been duly executed by both Lessor and Lessee and a fully executed copy of this Amendment has been delivered to both Lessor and Lessee. This Amendment may be executed in one or more counterparts, each of which shall be an original, but all of which, taken together, shall constitute one and the same Amendment.

16. Governing Law. This Amendment is governed by the Electronic Signatures in Global and National Commerce Act (15 U.S.C. §§ 7001 et seq.) and the laws of the State of California without regard to its conflicts of law rules.

[Signatures continue on the next page]

IN WITNESS WHEREOF, Lessor and Lessee have duly executed this Amendment as of the date first set forth above.

"**Lessor**"

MENLO PARK PORTFOLIO II, LLC,
a Delaware limited liability company

By: PREHC MENLO PARK PORTFOLIO II MEMBER, LLC,
a Delaware limited liability company
Its: Co-Managing Member

By: PRINCIPAL REAL ESTATE INVESTORS, LLC,
a Delaware limited liability company, authorized signatory

By: /s/ Kevin Anderegg
Name: Kevin Anderegg
Title: Assistant Managing Director

By: /s/ Sara Hoffman
Name: Sara Hoffman
Title: Assistant Financial Controller

By: TPI INVESTORS 11, LLC, a California limited liability company

By: TARLTON PROPERTIES, INC., a California corporation
Its: Managing Member

By: /s/ John C. Tarlton
Name: John C. Tarlton
Title: CEO

"**Lessee**"

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.,
a Delaware corporation

By: /s/ Ben Gong
Printed Name: Ben Gong
Its: VP Finance

By: _____
Printed Name: _____
Its: _____

EXHIBIT "A"
Floor Plan

[See Attached]

[***]

SECOND AMENDMENT TO LEASE

THIS SECOND AMENDMENT TO LEASE (this "Amendment") is made as of December 30, 2019 (the "Effective Date"), by and between MENLO PARK PORTFOLIO II, LLC, a Delaware limited liability company ("Lessor") and PACIFIC BIOSCIENCES OF CALIFORNIA, INC., a Delaware corporation ("Lessee").

RECITALS

A. Lessor and Lessee entered into that certain Lease, dated as of July 22, 2015, as amended by that certain First Amendment to Lease, dated as of December 23, 2016 and that certain Commencement Date Memorandum, dated December 23, 2016 (collectively, the "Lease"), pertaining to the premises located at 1315 O'Brien Drive, Menlo Park, California (the "Premises").

B. Lessor and Lessee desire to amend the Lease as set forth herein. Unless otherwise defined herein, all capitalized terms in this Amendment shall have the same meaning ascribed to them in the Lease.

TERMS AND CONDITIONS

In consideration of the mutual covenants herein contained, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Lessor and Lessee agree as follows:

1. Lessee's Pro Rata Share of Operating Expenses and Park Expenses. From and after the Effective Date, Lessee's Pro Rata Share of Operating Expenses appearing in Paragraph 6(a) of the Lease is hereby revised and thereafter shall be equal to Eighty-Two and Seventy-Six hundredths percent (82.76%). From and after the Effective Date, Lessee's Pro Rata Share of Park Expenses appearing in Paragraph 6(a) of the Lease is hereby revised and thereafter shall be equal to Twenty-Three and Seventy-Five hundredths percent (23.75%). The Pro Rata Share of Park Expenses (23.75%) is comprised of the following (the Cost Pools): Security Service = 15.48%; Amenities Service = 21.14%; Landscape Service = 7.51%. The foregoing Pro Rata Share figures shall be applicable during the entire Lease Term (including prior years). Lessee's Pro Rata Share of Park Expenses shall only be subject to adjustment if a new building is constructed on the Property or any other new building is constructed or parcel added to the Menlo Business Park, in which event Lessee's Pro Rate Share of Park Expenses will be adjusted in a fair and reasonable manner if and when such new building is constructed on the Property or any other new building is constructed or parcel added to the Menlo Business Park.

2. Lessee's Pro Rata Share of Taxes. Effective as of January 1, 2017, Lessee's Pro Rata Share of the Taxes appearing in Paragraph 6(a) of the Lease is hereby revised and shall be equal to Eighty-Two and Seventy-Six hundredths percent (82.76%).

3. Final Resolution for Period Prior to December 31, 2018. As a result of the adjustment to Lessee's Pro Rata Share of Operating Expenses and Lessee's Pro Rata Share of Park Expenses, as set forth in Section 1 above, Lessee shall receive a credit in the amount of (a) Ninety Nine Thousand Three Hundred Eighty Three and 69/100 Dollars ($99,383.69) and (b) Eighty Ninety Thousand Two Hundred Forty Two and 11/100 Dollars ($89,242.11), respectively, which amounts shall be credited against payments of Additional Rent next due hereunder. Additionally, as a result of the adjustment to Lessee's Pro Rata Share of the Taxes as set forth in Section 2 above, Lessee shall receive a credit in the amount of Two Hundred Twelve Thousand One Hundred Sixteen and 58/100 Dollars ($212,116.58), which amount shall be credited against payments of Additional Rent next due hereunder. Lessor and Lessee agree that there shall be no

further credits, payments, adjustments or reconciliations for Operating Expenses, Park Expenses or Taxes related to any period prior to December 31, 2018, other than as expressly set forth in this Section 3.

4. Credit. Commencing as of January 1, 2020 and continuing during the initial term of the Lease, Lessee shall receive a credit in the amount of Ten Thousand and 00/100 Dollars ($10,000.00) per month (the "Monthly Credit") towards Lessee's obligation to pay Lessee's Pro Rata Share of Operating Expenses, Park Expenses and Taxes as set forth in Paragraph 6 of the Lease. The Operating Statement provided by Lessor to Lessee pursuant to Paragraph 6(e) shall include a line item for the total Monthly Credit applicable to each calendar year of the initial term.

5. Parking. The first sentence of Paragraph 29 is hereby deleted in its entirety and replaced with the following language,

"Lessee shall have the right to use Four Hundred Twenty-Five (425) parking spaces at no additional cost to Lessee during the initial term of the Lease, in the parking area for the Building or nearby parking areas in Menlo Business Park, subject to such rules and regulations for such parking facilities which may be established or altered by Lessor at any time from time to time during the Lease Term; provided, however, that if Lessor builds a parking structure in the Menlo Business Park during the Lease Term (the "Parking Structure"), Lessor shall grant to Lessee the non-exclusive use of One Hundred (100) unreserved on-site vehicular parking spaces within such structure at no additional base rent to Lessee for the initial Term of the Lease; provided, however, that the parties agree and acknowledge that the Lessee's Pro-Rata Share of Operating Expenses, Taxes or Park Expenses shall be adjusted in a fair and reasonable manner if and when the Parking Structure is built to include the costs, taxes or expenses related to the Parking Structure (provided, that, in no event shall Operating Expenses, Taxes or Park Expenses include costs, taxes or expenses related to the intial design, construction or replacement of the Parking Structure) and such adjustments would be finalized upon completion of the Parking Structure using the following % calculations:

Parking Structure Operating Expense Percentage: Lessee parking spaces /total number of parking spaces in the Parking Structure. Sample calculation based on current estimated number of Parking Structure spaces: 100/689 = 14.51%

Taxes: final cost to build Lessee's 100 spaces/final assessors value of entire project including the Parking structure and building, future TI's and land. Sample calculation based on current estimates: $6,634,300 / ($127,096,170 + $39,000,000 + $7,300,000) = 3.83%.

6. Continuing Effect. All of the terms and conditions of the Lease shall remain in full force and effect, as the Lease is amended by this Amendment.

7. Conflicts. If any provision of this Amendment conflicts with the Lease, the provisions of this Amendment shall control.

8. Warranty of Authority. Each party represents and warrants to the other that the person signing this Amendment is duly and validly authorized to do so on behalf of the entity it purports to so bind, and if such party is a limited liability company or a corporation, that such limited liability company or corporation has full right and authority to enter into this Amendment and to perform all of its obligations hereunder and that it has obtained all necessary consents and approvals to enter into this Amendment.

9. Effectiveness. No binding agreement between the parties pursuant hereto shall arise or become effective until this Amendment has been duly executed by both Lessor and Lessee and a fully executed copy of this Amendment has been delivered to both Lessor and Lessee. This Amendment may be

executed in one or more counterparts, each of which shall be an original, but all of which, taken together, shall constitute one and the same Amendment.

10. Governing Law. This Amendment is governed by the Electronic Signatures in Global and National Commerce Act (15 U.S.C. §§ 7001 et seq.) and the laws of the State of California without regard to its conflicts of law rules.

[Signatures continue on the next page]

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IN WITNESS WHEREOF, Lessor and Lessee have duly executed this Amendment as of the date first set forth above.

"**Lessor**"

MENLO PARK PORTFOLIO II, LLC,
a Delaware limited liability company

By: GAVI PREHC HC, LLC,
a Delaware limited liability company
Its: Co-Managing Member

By: PRINCIPAL REAL ESTATE INVESTORS, LLC,
a Delaware limited liability company, authorized signatory

By: /s/ Jeffrey D. Uittenbogaard
Name: Jeffrey D. Uittenbogaard
Title: Investment Director Asset Management

By: TPI INVESTORS 11, LLC, a California limited liability company

By: TARLTON PROPERTIES, INC., a California corporation
Its: Managing Member

By: /s/ Ronald W. Krietemeyer
Name: Ronald W. Krietemeyer
Title: Chief Operating Officer

"**Lessee**"

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.,
a Delaware corporation

By: /s/ Ben Gong
Printed Name: Ben Gong
Its: VP, Finance

THIRD AMENDMENT TO LEASE

THIS THIRD AMENDMENT TO LEASE (this "**Amendment**") is made as of February 27, 2025 (the "**Effective Date**"), by and between **MENLO PARK PORTFOLIO II**, **LLC**, a Delaware limited liability company ("**Lessor**"), and **PACIFIC BIOSCIENCES OF CALIFORNIA, INC.**, a Delaware corporation ("**Lessee**").

RECITALS

A. Lessor and Lessee are parties to that certain Lease, dated as of July 22, 2015, as amended by that certain First Amendment to Lease, dated as of December 23, 2016, as further amended by that certain Commencement Date Memorandum, dated December 23, 2016, and as further amended by that certain Second Amendment to Lease, dated December 30, 2019 (the "**Second Amendment**" and as collectively amended, the "**Lease**"), with respect to certain premises located at 1305 O'Brien Drive, Menlo Park, California (the "**Premises**").

B. The existing Term of the Lease will expire on October 31, 2027. Lessor and Lessee desire to amend the Lease to extend the Term of the Lease and modify other provisions of the Lease, all as more particularly set forth herein. Capitalized terms used and not otherwise defined herein shall have the same meanings ascribed to them in the Lease.

TERMS AND CONDITIONS

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Lessor and Lessee agree that the Lease is amended as follows:

1. **Extension of the Term**. Effective as of the date hereof, the Term of the Lease is hereby extended for an additional period of seventy-eight (78) months (the "**Extended Term**") so that the Extended Term shall commence on November 1, 2027 ("**Revised Commencement Date**") and expire unless terminated sooner pursuant to the terms of the Lease, on April 30, 2034 ("**Revised Expiration Date**"). All references to "**Term**" in the Lease and this Amendment shall be deemed references to the Term as extended by this Amendment and all references to "**Expiration Date**" shall be deemed references to the Revised Expiration Date.

2. **Monthly Base Rent**.

(a) **Base Rent**. Effective as of the Revised Commencement Date and in addition to Additional Rent and all other costs and expenses payable by Lessee pursuant to the Lease, Lessee shall pay the following Monthly Base Rent for the Premises in accordance with the terms of Paragraph 6(a) of the Lease:

PERIOD	Square Feet	$/SF/Mo./NNN	MONTHLY BASE RENT
11/1/2027-10/31/2028	180,231	$5.70	$1,027,316.70
11/1/2028-10/31/2029	180,231	$5.87	$1,058,136.20

11/1/2029-10/31/2030	180,231	$6.05	$1,089,880.29
11/1/2030-10/31/2031	180,231	$6.23	$1,122,576.70
11/1/2031-10/31/2032	180,231	$6.42	$1,156,254.00
11/1/2032-10/31/2033	180,231	$6.61	$1,190,941.62
11/1/2033-4/30/2034	180,231	$6.81	$1,226,669.86

(b) **Abatement of Base Rent**. Lessee's Monthly Base Rent shall be abated for the first seventeen (17) full months following the Effective Date (the "**Abatement Period**"), if and for so long as Lessee is not in material default under the Lease beyond all applicable notice and cure periods (a "**Default**"). The total eligible abatement of Monthly Base Rent pursuant to the foregoing based on the assumptions that the Abatement Period commences on March 1, 2025 and ends July 31, 2026 and that Lessee is not in Default during the Abatement Period shall be Eleven Million Six Hundred Forty-One Thousand Sixty-Four and 52/100 Dollars ($11,641,064.52). The foregoing abatement of Monthly Base Rent payable by Lessee shall not be construed as an abatement of any other rent, Additional Rent, or charges payable under the Lease, as amended by this Amendment, including without limitation, Lessee's Pro Rata Share of Operating Expenses of the Property, Lessee's Pro Rata Share of the Park Expenses and Lessee's Pro Rata Share of Taxes in accordance with the terms of the Lease. If Lessee Defaults under the terms of this Lease, and such Default results in the termination of this Lease in accordance with the provisions of Paragraph 23 of the Lease, then the amount of the abated Monthly Base Rent through the date of such termination ("**Abated Base Rent**") shall immediately become due and payable as part of Additional Rent under this Lease as of the day prior to such termination. In such event, as a part of the recovery set forth in Paragraph 23 of the Lease, Lessor shall be entitled to recover, in addition to any other amounts due from Lessee, the amount of the Abated Base Rent due under this Section 2(b) as Additional Rent. Notwithstanding the foregoing or anything to the contrary set forth in the Lease or this Amendment, at any time during the Abatement Period, Lessor shall have the right (but not the obligation), in its sole and absolute discretion, to pay Lessee all or a portion of the total amount of the then unamortized amount of the abated Monthly Base Rent during the Abatement Period, in which event (i) Lessee's obligation to pay Monthly Base Rent shall automatically be reinstated for the remainder of the Abatement Period covered by Lessor's lump sum payment, at the then-applicable amounts and otherwise in accordance with the terms of the Lease and this Amendment, and (ii) Lessee shall not be entitled to any additional abated Monthly Base Rent under this Amendment.

3. **Additional Rent**. During the Extended Term and in addition to the Monthly Base Rent set forth in Section 2(a) of this Amendment, Lessee shall continue to pay all Additional Rent for the Premises, including without limitation, Lessee's Pro Rata Share of Operating Expenses of the Property, Lessee's Pro Rata Share of the Park Expenses and Lessee's Pro Rata Share of Taxes in accordance with the terms of the Lease, as amended herein.

4. **Lessee's Pro Rata Share of Operating Expenses**. From and after the Effective Date, Lessee's Pro Rata Share of Operating Expenses of the Property appearing in Paragraph 1 of

the Second Amendment is hereby revised and thereafter shall be equal to Ninety-Four and Sixty-Six hundredths percent (94.66%) (180,231/190,389).

5. **Lessee's Pro Rata Share of Taxes**. From and after the Effective Date, Lessee's Pro Rata Share of Taxes appearing in Paragraph 2 of the Second Amendment is hereby revised and thereafter shall be equal to Ninety-Four and Sixty-Six hundredths percent (94.66%).

6. **Tenant Improvements**.

(a) **Approved Space Plan; Tenant Improvement Documents**. Following execution of this Amendment, Lessor and Lessee shall work cooperatively to approve the scope of and complete detailed plans for the construction of certain improvements and modifications to the Premises (the "**Tenant Improvements**"). Rather than a single, comprehensive space plan, the Tenant Improvements shall be completed on a phased basis, with Lessee submitting various project-specific space plans for approval (each, an "**Approved Space Plan**") throughout the period from the Effective Date of this Amendment through the "**Outside Date**" (as defined below). For each phase, Lessor shall cause the Tenant Improvements to be constructed in the Premises in accordance with the terms of this Section 6. For each Approved Space Plan submitted by Lessee, subject to Lessee's approval, not to be unreasonably withheld, conditioned, or delayed, Lessor shall select an architect ("**Architect**") and an engineer ("**Engineer**") familiar with the Building Requirements and with all Applicable Laws. Lessor shall engage and manage the Architect and Engineer to prepare, based upon and in conformity with each Approved Space Plan, detailed specifications and engineered working drawings for the respective Tenant Improvements (the "**Tenant Improvement Documents**"). Lessor and Lessee shall mutually agree upon a schedule of dates for deliveries and receipt of approvals for each phase (the "**Schedule**"). Lessee shall have the right to review and approve the Tenant Improvement Documents for each phase; provided, however, that so long as the Tenant Improvement Documents are consistent with the applicable Approved Space Plan, Lessee's approval shall not be unreasonably withheld, conditioned, or delayed, and such approval shall otherwise be given within the timeframes set forth in the Schedule. Prior to the approval dates set forth in the Schedule, if Lessee requests that Lessor make any changes to the Tenant Improvement Documents, Lessor and Lessee shall work together in good faith to promptly agree upon any changes necessary to ensure the Tenant Improvement Documents are consistent with the applicable Approved Space Plan and any previously approved Tenant Improvement Documents. Provided that Lessor delivers to Lessee the Tenant Improvement Documents in compliance with the dates set forth in the Schedule for each phase, Lessee shall approve the Tenant Improvement Documents by the applicable final approval dates ("Final Approval Dates") specified in the Schedule. Lessee's failure to approve the Tenant Improvement Documents by the applicable Final Approval Date shall constitute a Lessee delay, and Lessor's failure to submit the Tenant Improvement Documents at least five (5) days in advance of the applicable Final Approval Dates shall constitute a Lessor delay.

(b) **General Contractor; Construction Contract**. Following completion of each phase of the Tenant Improvement Documents and subject to Lessee's approval, not to be unreasonably withheld, conditioned, or delayed, Lessor shall select a general contractor ("**General**

Contractor") familiar with the Building Requirements and with all Applicable Laws. As soon as reasonably practicable, the General Contractor shall cause to be prepared, and delivered to Lessor and Lessee, a cost estimate for each phase of the Tenant Improvements. Lessor and Lessee shall cooperate to achieve efficiencies in the cost of the Tenant Improvements and shall confer and negotiate in good faith to reach agreement on a Final Budget for each phase of the Tenant Improvements (such approved budget, the "Final Budget"). Lessor shall use commercially reasonable efforts to enter into a commercially reasonable stipulated sum construction contract with the General Contractor (the "Construction Contract") in the amount of the Final Budget applicable to each phase of the Tenant Improvements. In no event shall the contract sum under the Construction Contract increase without Lessee's prior written consent, not to be unreasonably withheld, conditioned, or delayed. Lessor shall provide Lessee with a copy of the proposed Construction Contract prior to execution for Lessee's approval and shall provide Lessee with a copy of the approved Construction Contract following execution thereof with General Contractor. Lessee's approval of the Construction Contract shall not be unreasonably withheld, conditioned, or delayed. If Lessee objects to any term(s) of the proposed Construction Contract, Lessee shall promptly work with Lessor to resolve such concerns so as not to delay completion of the Tenant Improvements. Lessee's failure to timely approve the Construction Contract shall be a Lessee delay. Lessee agrees and understands that the review of the plans pursuant to this Section 6 by Lessor is solely to protect the interests of Lessor in the Building and the Premises, and Lessor shall not be the guarantor of, nor responsible for, the correctness or accuracy of any such plans or compliance of such plans with Applicable Laws; provided, however, Lessor shall obtain all necessary permits from the City or applicable governmental agency with jurisdiction for each Approved Space Plans as required by Applicable Laws. Lessor agrees to (i) use reasonable efforts to assign any assignable warranties or guaranties provided by the contractors or manufacturers of equipment to be maintained by Lessee pursuant to the Lease (if any) provided as part of the Tenant Improvements or, at Lessee's option, to enforce the same with respect to any defect discovered in such equipment within one (1) year after the substantial completion date of the applicable phase of the Tenant Improvements and (ii) to enforce all other warranties and guaranties with respect to any defect discovered in the Tenant Improvements within one (1) year after the substantial completion date of the applicable phase of the Tenant Improvements. Lessor agrees to obtain a one-year warranty against construction defects in the Tenant Improvements for a period of one year following substantial construction applicable to each phase of the Tenant Improvements.

(c) **Construction Schedule**. Promptly after Lessor and Lessee have approved the applicable phase of the Tenant Improvement Documents and its corresponding Final Budget, the General Contractor shall (i) provide Lessor and Lessee with a construction schedule (the "**Construction Schedule**") and (ii) commence construction of the Tenant Improvements. Each phase of the Tenant Improvements shall be performed in accordance with the approved Tenant Improvement Documents, Final Budget, and Construction Schedule applicable thereto in a diligent, good and workmanlike manner using new materials. The Tenant Improvements shall comply in all respects with the following: (a) the City of Menlo Park Building Code and other state, federal, city or quasi-governmental laws, codes, ordinances and regulations, as each may apply according to the rulings of the controlling public official, agent or other person; (b) applicable standards of the American Insurance Association (formerly, the National Board of Fire

Underwriters) and the National Electrical Code; and (c) building material manufacturer's specifications. Lessee hereby acknowledges that the Lessor may be required to cause union-only labor to be utilized on some portions of the Tenant Improvements, including, without limitation, mechanical, electrical and plumbing. Lessee acknowledges that the Tenant Improvements will be performed during Lessee's occupancy and use of the Premises, and may result in inconvenience to Lessee. Lessee will fully cooperate with Lessor's efforts to efficiently complete the Tenant Improvements. Lessor shall use reasonable efforts to minimize interference with Lessee's use and occupancy of the Premises during the performance of the Tenant Improvements, and Lessor shall perform the Tenant Improvements in a manner which will ensure a secure and safe work site is maintained at all times, mitigate noise throughout the Premises, keep the Premises clean of dust and debris, and which provides customary protective measures for areas of the Premises in the immediate vicinity of the Tenant Improvements. Without limiting the foregoing, at Tenant's request, the Construction Schedule shall provide that all disruptive Tenant Improvements shall be performed outside of ordinary business hours. Lessee hereby agrees that the performance of the Tenant Improvements shall in no way constitute a constructive eviction of Lessee or entitle Lessee to any abatement of rent payable pursuant to the Lease. At the conclusion of construction, the General Contractor and Designer shall notify Lessor and Lessee of the substantial completion of the Tenant Improvements. At the conclusion of construction, the General Contractor shall also deliver to Lessor (who shall deliver copies of the same to Lessee) (i) "As-Built" plans of the Tenant Improvements in hard copy together with a digital copy (in such commercially reasonable format as shall be designated by Lessor), and (ii) lien waivers/releases from the General Contractor and all of its sub-contractors reflecting that the cost of the Tenant Improvements has been paid in full.

(d) **Change Orders**. In the event that Lessee desires to make any changes to the approved Tenant Improvement Documents, Lessee shall seek Lessor's prior written approval of any such changes before they are made and such changes, as well as any Lessee delay or change in the Final Budget resulting therefrom, must be identified in an approved written "Change Order" prior to proceeding with such changes. Changes requested by Lessee to the dates set forth in the Schedule and/or the Construction Schedule shall also be done via a written Change Order approved by Lessor. Change Orders for work on any Approved Space Plan submitted prior to the Outside Date but completed afterward shall follow the same procedures set forth in this section.

(e) **Tenant Improvement Allowance; Tenant Improvement Shortfall**. Lessor shall contribute up to, but not exceeding Seven Million Two Hundred Nine Thousand Two Hundred Forty and 00/100 Dollars ($7,209,240.00) which amount equates to Forty Dollars ($40.00) per rentable square foot of the Premises (the "**Tenant Improvement Allowance**") for costs relating to the initial design and construction of the Tenant Improvements. The Tenant Improvement Allowance shall be used to pay for the cost of (i) the construction drawings for the Tenant Improvements within the Premises, (ii) engineering required in connection with the performance of such work, (iii) all permit fees required by any administrative or governmental agency in connection with the performance of the Tenant Improvements or other costs expended in obtaining approvals and permits, (iv) General Contractor, subcontractors, vendors, and suppliers costs and charges for materials, supplies and labor, contractor's profit, overhead and general conditions, (v) Change Orders, and (vi) Supervision Fee (as defined below). Lessee shall be liable

for all fees and costs of the design and construction of the Tenant Improvements in excess of the Tenant Improvement Allowance (such amount referred to herein as the "**Tenant Improvement Shortfall**"). Lessor shall disburse the Tenant Improvement Allowance directly to the applicable design professionals, contractors, materialmen or other laborers in connection with the construction of the Tenant Improvements. Lessee shall pay the Tenant Improvement Shortfall upon written request from Lessor accompanied by invoices reflecting such amounts due within thirty (30) days following Lessor's delivery of such payment request. The Tenant Improvement Shortfall shall be invoiced and paid monthly as the construction costs are incurred during construction of the Tenant Improvements and shall be payable in proportion to the percentage that the Tenant Improvement Shortfall bears to the total cost of the Tenant Improvements. Following completion of each phase of the Tenant Improvements and final determination of the cost of the Tenant Improvement Shortfall for that phase, the parties shall review and reconcile any underpayments or overpayments by Lessee of the Tenant Improvement Shortfall. Lessor shall employ Tarlton Properties, Inc. as construction manager for the Tenant Improvements at a fee (the "Supervision Fee") equal to three percent (3%) of hard construction costs of the Tenant Improvements (i.e., the amounts paid to any general contractor, subcontractors, vendors, and suppliers for labor and materials for the construction of the Tenant Improvements). The Tenant Improvements shall be constructed on an "open book" basis and Lessee shall have the right to reasonably audit and inspect all relevant costs, books and records related to the Tenant Improvements in Lessor's office during normal business hours upon not less than forty-eight hours' advance written notice to Lessor. Lessee must complete its final audit and review within sixty (60) days of Lessor's payment of final invoices for the Tenant Improvements. Lessee shall have no responsibility for and the Tenant Improvement Allowance shall not be used for the following: (a) attorneys' fees, experts' fees and other costs in connection with disputes with third parties; (b) interest and other costs of financing construction costs, if any, incurred by Lessor; (c) costs incurred as a consequence of Lessor Delay; (d) costs recovered by Lessor upon account of warranties and insurance; (e) provided Lessee promptly pays its Tenant Improvement Shortfall as and when invoiced, and for increases in costs resulting from Tenant Delays or Change Orders, penalties and late charges attributable to Lessor's failure to pay construction costs for which Lessor is responsible hereunder (not including any costs associated with construction, installation or equipment directly contracted for by Lessee); and (f) construction management and overhead charges of Lessor other than the Supervision Fee.

(f) **Outside Date**. If any portion of the Tenant Improvement Allowance is not used by Lessee prior to December 31, 2027 (the "**Outside Date**"), such portion shall be deemed waived with no further obligation by Lessor with respect thereto; provided, however, if Lessee and Lessor have approved the Tenant Improvement Documents for one or more Approved Space Plans by October 1, 2027, and there remains Tenant Improvement Allowance funds available, such remaining funds may be applied towards such Approved Space Plan(s) within the time period set forth herein, even if the associated Tenant Improvements are completed after the Outside Date, but in no event shall the Tenant Improvement Allowance funds be available for any project after December 31, 2028. Notwithstanding the foregoing, if all necessary permits with respect to an Approved Space Plan have been obtained and construction work has commenced on the project prior to December 31, 2028, then Lessee shall have until June 30, 2029 to use any remaining Tenant Improvement Allowance funds available for such project. If the total cost of the Tenant

Improvements is less than the amount of the Tenant Improvement Allowance, and provided that Lessee is not in Default under this Lease, then Lessee shall have the option, exercised by written notice to Lessor delivered prior to the Outside Date, to use an amount equal to the difference between the total cost of the Tenant Improvements and the Tenant Improvement Allowance, such amount not to exceed $10.00 per rentable square foot of the Premises (the "Excess Allowance") to pay for Lessee's furniture, fixtures and equipment within the Premises (the "FF&E Credit"). If Lessee does not use all of the Excess Allowance prior to December 31, 2028, as may be extended as set forth above, then such unused portion of the Excess Allowance shall thereafter be deemed waived with no further obligation by Lessor with respect thereto.

7. **Option to Extend**. All references to the "Extended Term" in Paragraph 3 of the Lease shall be deemed references to the Second Extended Term (as hereinafter defined) and Paragraph 3(a) of the Lease is hereby deleted in its entirety and replaced with the following language:

"(a) Lessor hereby grants to Lessee one (1) option to extend the Term of this Lease (the "**Option to Extend**") for a period of ten (10) years (the "**Second Extended Term**") immediately following the expiration of the Extended Term. Lessee may exercise the Option to Extend by giving written notice of exercise to Lessor at least nine (9) months but no more than twelve (12) months prior to the expiration of the Extended Term of this Lease (the "**Option Exercise Period**"), time being of the essence; provided that if (i) at any time between the date of delivery of the exercise notice by Lessee and the end of the Extended Term there is an uncured Default continuing beyond any applicable notice and cure periods, or (ii) Lessee is then occupying and conducting operations for the Use permitted in Paragraph 9 of the Lease in less than fifty-one percent (51%) of the Premises, then such notice shall be void and of no force or effect. The Second Extended Term, if the Option to Extend is exercised, shall be upon the same terms and conditions as the Extended Term of this Lease, including the payment by Lessee of the Additional Rent pursuant to Paragraph 6 of the Lease, except that (A) Lessee shall pay Monthly Base Rent, as determined as set forth in Paragraph 3 of this Lease, during the Second Extended Term, (B) there shall be no additional option to extend, and (C) Lessee shall accept the Premises in their then "as is" condition and Lessor shall have no obligation to provide a tenant improvement allowance. If Lessee does not exercise the Option to Extend in a timely manner the Option to Extend shall lapse, time being of the essence."

8. **Condition of the Premises**. Expect as set forth in Section 6 above, Lessor shall have no obligation whatsoever to construct leasehold improvements for Lessee or to repair or refurbish the Premises (except for Lessor's express repair and maintenance obligations set forth in the Lease). Subject to the foregoing, the taking of possession of the Premises by Lessee shall be conclusive evidence that Lessee accepts the same "**AS IS**" and that the Premises is suited for the use intended by Lessee and was in good and satisfactory condition as of the Effective Date. Lessee acknowledges that neither Lessor nor Lessor's agents has made any representation or warranty as to the condition of the Premises or the Building or its suitability for Lessee's purposes. Lessee represents and warrants to Lessor that (a) its sole intended use of the Premises is for uses set forth

in the Lease, (b) it does not intend to use the Premises for any other purpose, and (c) prior to executing this Amendment it has made such investigations as it deems appropriate with respect to the suitability of the Premises for its intended use and has determined that the Premises is suitable for such intended use.

9. **Assignment and Subletting**. Paragraph 18(b)(3) of the Lease is hereby deleted in its entirety and shall have no further force or effect.

10. **Security Deposit**. Lessor is currently holding a Security Deposit in the form of a Letter of Credit in the amount of $1,500,000.00 pursuant to the terms and conditions set forth in Paragraph 8 of the Lease.

11. **Deletion**. Effective as of the Revised Commencement Date, Paragraph 4 of the Second Amendment (Credit) shall be deleted and have no further force and effect.

12. **Civil Code Section 1938 Disclosure**. For purposes of Section 1938(a) of the California Civil Code, Lessor hereby discloses to Lessee, and Lessee hereby acknowledges that neither the Building nor the Premises has undergone inspection by a Certified Access Specialist (CASp) (defined by California Civil Code Section 55.52). Pursuant to California Civil Code Section 1938, Lessee is hereby notified that a CASp can inspect the Premises and determine whether the Premises complies with all of the applicable construction-related accessibility standards under state law. Although state law does not require a CASp inspection of the Premises, Lessor may not prohibit Lessee from obtaining a CASp inspection of the Premises for the occupancy of the Lessee, if requested by Lessee. Lessor and Lessee shall mutually agree on the arrangements for the time and manner of any CASp inspection, the payment of the fee for the CASp inspection and the cost of making any repairs necessary to correct violations of construction-related accessibility standards within the Premises.

13. **OFAC List Representation**. Lessee hereby represents and warrants to Lessor that neither Lessee nor any of its officers, directors, or affiliates is or will be an entity or person: (i) that is listed in the annex to, or is otherwise subject to the provisions of, Executive Order 13224 issued on September 24, 2001 ("**EO 13224**"); (ii) whose name appears on the United States Treasury Department's Office of Foreign Assets Control ("**OFAC**") most current list of "Specifically Designated National and Blocked Persons" (which list may be published from time to time in various mediums including, but not limited to, the OFAC website, http:www.treas.gov/ofac/t11sdn.pdf); (iii) who commits, threatens to commit or supports "terrorism," as that term is defined in EO 13224; or (iv) who is otherwise affiliated with any entity or person listed above.

14. **Real Estate Brokers**. Lessee's broker is Savills, Inc. ("**Lessee's Broker**") and Lessor's broker is CBRE, Inc., ("**Lessor's Broker**" and collectively, with Lessee's Broker, the "**Brokers**"). Each party represents and warrants to the other party that it has not had any dealings with or engaged any other broker, finder or other person other than the Brokers who would be entitled to any commission or fees in respect of the negotiation, execution or delivery of this

Amendment, and each party shall indemnify, defend and hold harmless the other party from all damages, expenses, and liabilities resulting from any claims that may be asserted against the other party by such broker, finder or other person on the basis of any arrangements or agreements made or alleged to have been made by or on behalf of such party. Lessor shall pay a leasing commission to the Brokers pursuant to the terms of a separate written agreement.

15. **Continuing Effect**. All of the terms and conditions of the Lease shall remain in full force and effect, as the Lease is amended by this Amendment.

16. **Conflicts**. If any provision of this Amendment conflicts with the Lease, the provisions of this Amendment shall control.

17. **Warranty of Authority**. Each party represents and warrants to the other that the person signing this Amendment is duly and validly authorized to do so on behalf of the entity it purports to so bind, and if such party is a limited liability company or a corporation, that such limited liability company or corporation has full right and authority to enter into this Amendment and to perform all of its obligations hereunder and that it has obtained all necessary consents and approvals to enter into this Amendment, including from the holder of any Security Instrument, if any exists.

18. **Effectiveness**. No binding agreement between the parties pursuant hereto shall arise or become effective. until this Amendment has been duly executed by both Lessor and Lessee and a fully executed copy of this Amendment has been delivered to both Lessor and Lessee. This Amendment may be executed in one or more counterparts, each of which shall be an original, but all of which, taken together, shall constitute one and the same Amendment

19. **Governing Law**. This Amendment is governed by the Electronic Signatures in Global and National Commerce Act (15 U.S.C.§§ 7001 et seq.) and the laws of the State of California without regard to its conflicts of law rule.

(*SIGNATURES ON NEXT PAGE*)

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the date first above written.

"**LESSOR**"

MENLO PARK PORTFOLIO II, LLC, a Delaware limited liability company

By: GAVI MENLO PARK PORTFOLIO II MEMBER, LLC,
a Delaware limited liability company,
its Co-Managing Member

By: PRINCIPAL REAL ESTATE INVESTORS, LLC,
a Delaware limited liability company, its authorized signatory

By /s/ Alex Mather
Name: Alex Mather
Title: Managing Director

By /s/ Joel Woehler
Name: Joel Woehler
Title: Managing Director

By: TPI INVESTORS 11, LLC,
a California limited liability company, its managing member

By: TARLTON PROPERTIES, INC., a California corporation

By /s/ Elizabeth Krietemeyer
Name: Elizabeth Krietemeyer
Title: Senior Vice President

"**LESSEE**"

PACIFIC BIOSCIENCES OF CALIFORNIA, INC.,
a Delaware corporation

By: /s/ Mark Van Oene
Name: Mark Van Oene
Its: Chief Operating Officer

PACIFIC BIOSCIENCES OF CALIFORNIA, INC. OUTSIDE DIRECTOR COMPENSATION POLICY

Effective as of April 6, 2024

Pacific Biosciences of California, Inc. (the "**Company**") believes that providing cash and equity compensation to its members of the Board of Directors (the "**Board**," and members of the Board, the "**Directors**") represents an effective tool to attract, retain and reward Directors who are not Employees of the Company (the "**Outside Directors**"). This Outside Director Compensation Policy (the "**Policy**") is intended to formalize the Company's policy regarding cash compensation and grants of equity awards to its Outside Directors. Unless otherwise defined herein, capitalized terms used in this Policy will have the meaning given such term in the Company's 2020 Equity Incentive Plan (the "**Plan**"). Each Outside Director will be solely responsible for any tax obligations incurred by such Outside Director as a result of the equity and cash payments such Outside Director receives under this Policy.

This Policy will be effective as of April 6, 2024 (such date, the "**Effective Date**").

1. CASH COMPENSATION

Annual Cash Retainer

Each Outside Director will be paid an annual cash retainer of $40,000. There are no per- meeting attendance fees for attending Board meetings. This cash compensation will be paid quarterly in equal installments in advance.

Committee Annual Cash Retainer

As of the Effective Date, each Outside Director who serves as the lead Outside Director or Board chair, or the chair or a member of a committee of the Board, will be eligible to earn additional annual fees (paid quarterly in equal installments in advance) as follows:

Lead Independent Director/Board Chair:	$40,000
Chair of Audit Committee:	$20,000
Member of Audit Committee:	$10,000
Chair of Compensation Committee:	$14,000
Member of Compensation Committee:	$7,000
Chair of Corporate Governance and Nominating Committee:	$10,000
Member of Corporate Governance and Nominating Committee:	$5,000
Chair of Science and Technology Committee:	$10,000

Member of Science and Technology Committee:	$5,000

For clarity, each Outside Director who serves as the chair of a committee will not receive both the additional annual fee as the chair of the committee and the additional annual fee as a member of the committee.

2. EQUITY COMPENSATION

Outside Directors will be eligible to receive all types of Awards (except Incentive Stock Options) under the Plan (or the applicable equity plan in place at the time of grant), including discretionary Awards not covered under this Policy. All grants of Awards to Outside Directors pursuant to Section 2 of this Policy will be automatic and nondiscretionary, except as otherwise provided herein, and will be made in accordance with the following provisions:

(a) No Discretion. No person will have any discretion to select which Outside Directors will be granted any Awards under this Policy or to determine the number of Shares to be covered by such Awards.

(b) Initial Awards. Subject to adjustment pursuant to the applicable terms of the Plan, each individual who first becomes an Outside Director following the Effective Date automatically will be granted an Award of Nonstatutory Stock Options (an "**Initial Option Award**") and an Award of Restricted Stock Units (an "**Initial RSU Award**," and together with the Initial Option Award, the "**Initial Awards**") that have an aggregate Value (as defined below) as of such Initial Awards' grant date equal to $450,000, with the Initial Option Award having a Value equal to fifty percent (50%) of such dollar amount and the Initial RSU Award having a Value equal to fifty percent (50%) of such dollar amount; provided that in no event will the aggregate number of Shares subject to the Initial Awards granted to an Outside Director exceed 127,000 Shares. The Initial Awards will be made on the first date on which such individual first becomes an Outside Director (the first date as an Outside Director, the "**Initial Start Date**"), whether through election by the stockholders of the Company or appointment by the Board to fill a vacancy. If an individual was a member of the Board and also an Employee, becoming an Outside Director due to termination of employment will not entitle the Outside Director to any Initial Awards. Each Initial Option Award will be scheduled to vest as to one-third (1/3rd) of the Shares subject to the Initial Option Award on the one (1) year anniversary of the Outside Director's Initial Start Date, and thereafter, in equal installments on a monthly basis for the next twenty-four (24) months on the same day of the month as the Outside Director's Initial Start Date (or if a particular month does not have a corresponding day within that month, then the last day of that month), in each case subject to the Outside Director continuing to be a Director through the applicable vesting date. Each Initial RSU Award will be scheduled to vest as to one-third (1/3rd) of the Shares subject to the Initial RSU Award on the one (1), two (2), and three (3) year anniversaries of the Outside Director's Initial Start Date, in each case subject to the Outside Director continuing to be a Director through the applicable vesting date.

(c) Annual Awards. Subject to adjustment pursuant to the applicable terms of the Plan, effective as of the date of each Annual Meeting (as defined below) occurring after the Effective Date (an "**Annual Meeting Date**"), each individual who is an Outside Director as of such date

will be automatically granted an Award of Nonstatutory Stock Options (the "**Annual Option Award**") and an Award of Restricted Stock Units (the "**Annual RSU Award**," and together with the Annual Option Award, the "**Annual Awards**") with an aggregate Value as of such Annual Awards' grant date equal to $200,000, with the Annual Option Award having a Value equal to fifty percent (50%) of such dollar amount and the Annual RSU Award having a Value equal to fifty percent (50%) of such dollar amount; provided that in no event will the aggregate number of Shares subject to the Annual Awards granted to an Outside Director as of an Annual Meeting Date exceed 55,000 Shares. Further, the Value of the first Annual Awards to be granted to an Outside Director will be prorated based on the number of months of continuous service such Outside Director provided as a member of the Board during the twelve (12) month period immediately preceding such Annual Meeting Date (with any partial month of service provided rounded up to the nearest whole month) to the extent such individual's service as a member of the Board commenced after the date of the immediately preceding Annual Meeting. For purposes of clarity, an individual who is an Outside Director as of an Annual Meeting Date who resigns from such Outside Director role or otherwise ceases to be an Outside Director as of such date, will not be granted any Annual Awards on such date, and an individual who first becomes an Outside Director as of an Annual Meeting Date will be eligible to receive Initial Awards pursuant to subsection (b) above but not any Annual Awards with respect to such Annual Meeting Date. The Annual Option Award will be scheduled to vest monthly over one (1) year, on the same day of the month as the Annual Option Award's date of grant (or if a particular month does not have a corresponding day within that month, then the last day of that month) or if earlier, on the date of the next annual meeting of the Company's stockholders occurring after the Annual Award's date of grant, provided such Outside Director continues to serve as a Director through the applicable vesting dates. The Annual RSU Award will be scheduled to vest on the one (1) year anniversary of the Annual RSU Award's date of grant or if earlier, on the date of the next annual meeting of the Company's stockholders occurring after the Annual Award's date of grant, provided such Outside Director continues to serve as a Director through such vesting date.

(d) Value. For purposes of this Policy, "**Value**" means, with respect to an Award or Options or Restricted Stock Units, its grant date fair value (determined in accordance with U.S. generally accepted accounting principles), or such other methodology the Board or Compensation Committee may determine prior to the grant of the Award becoming effective, as applicable; provided, however, that any Award of Options or Restricted Stock Units will cover only a whole number of Shares, such that any fractional Share that otherwise would result from a given Value will be rounded down and will not become subject to such Award. For purposes of clarity, in the event that the Share limit set forth in subsection (b) or (c) above is exceeded, then the aggregate Value of the Initial Awards or Annual Awards, as applicable, will be reduced (while the 50/50 mix of Options and Restricted Stock Units based on Value is maintained) until the aggregate number of Shares subject to such Awards ceases to exceed such Share limit.

(e) Other Terms of Awards. For purposes of this Policy, "**Annual Meeting**" means an annual meeting of the Company's stockholders (after giving effect to any postponements and adjournments with respect thereto). Each Award granted under this Policy will be evidenced by the applicable form of Award agreement as approved by the Board or the Compensation Committee of the Board, as applicable, for use thereunder. The per Share exercise price of an Option granted under this Policy will be one hundred percent (100%) of the Fair Market Value on the Option's date of grant. The maximum term to expiration of an Option granted under this Policy

will be ten (10) years, subject to earlier termination as provided in the Plan and the Award agreement governing the terms of the Option. Awards granted pursuant to this Policy are subject to the terms and conditions of the Plan, including for clarity, and without limitation, that the number of Shares to be covered by an Award is subject to the number of Shares available for issuance under the Plan as of the grant date of such Award (and accordingly, will be subject to reduction on a prorated basis to the extent Awards to be granted pursuant to the Policy as of a given date would cover a number of Shares that exceeds the number of Shares available for issuance under the Plan).

3. ADDITIONAL PROVISIONS

All provisions of the Plan not inconsistent with this Policy will apply to Awards granted to Outside Directors.

4. ADJUSTMENTS

In the event that any dividend or other distribution (whether in the form of cash, Shares, other securities or other property), recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, reclassification, repurchase, or exchange of Shares or other securities of the Company, or other change in the corporate structure of the Company affecting the Shares occurs (other than any ordinary dividends or other ordinary distributions), the Administrator, in order to prevent diminution or enlargement of the benefits or potential benefits intended to be made available under this Policy, will adjust the number of Shares issuable pursuant to Awards granted under this Policy.

5. LIMITATIONS

No Outside Director may be granted, in any Fiscal Year, Awards (the value of which will be based on their grant date fair value determined in accordance with U.S. generally accepted accounting principles) and any other compensation (including without limitation any cash retainers or fees) that, in the aggregate, exceed $500,000, provided that such amount is increased to $1,000,000 in the Fiscal Year of his or her initial service as an Outside Director. Any Awards or other compensation provided to an individual for his or her services as an Employee, or for his or her services as a Consultant other than as an Outside Director, will be excluded for purposes of this Section.

6. SECTION 409A

In no event will cash payments under this Policy be paid after the later of (i) the 15th day of the 3rd month following the end of the Company's fiscal year in which the compensation is earned or expenses are incurred, as applicable, or (ii) the 15th day of the 3rd month following the end of the calendar year in which the compensation is earned or expenses are incurred, as applicable, in compliance with the "short-term deferral" exception under Section 409A of the Internal Revenue Code of 1986, as amended, and the final regulations and guidance thereunder, as may be amended from time to time (together, "**Section 409A**"). It is the intent of this Policy that this Policy and all payments hereunder be exempt from or otherwise comply with the requirements of Section 409A so that none of the compensation to be provided hereunder will be subject to the additional tax imposed under Section 409A, and any ambiguities or ambiguous terms herein will

be interpreted to be so exempt or comply. In no event will the Company or any of its Parent or Subsidiaries have any responsibility, obligation, or liability to reimburse, indemnify, or hold harmless an Outside Director for any taxes imposed, or other costs incurred, as a result of Section 409A.

7. REVISIONS

The Board may amend, alter, suspend or terminate this Policy at any time and for any reason. Further, the Board may provide for cash, equity-based or other compensation to Outside Directors in addition to the compensation provided under this Policy. No amendment, alteration, suspension or termination of this Policy will materially impair the rights of an Outside Director with respect to compensation that already has been paid or awarded, unless otherwise mutually agreed between the Outside Director and the Company. Termination of this Policy will not affect the Board's or the Compensation Committee's ability to exercise the powers granted to it under the Plan with respect to Awards granted under the Plan pursuant to this Policy prior to the date of such termination.

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PACIFIC BIOSCIENCES OF CALIFORNIA, INC. INSIDER TRADING POLICY

(As amended and restated on October 30, 2024)

A. POLICY OVERVIEW

Pacific Biosciences of California, Inc. (together with any subsidiaries, collectively the "**Company**") has adopted this Insider Trading Policy (the "**Policy**") to help you comply with the federal and state securities laws and regulations that govern trading in securities and to help the Company minimize its own legal and reputational risk. This Policy amends and restates any prior policy previously adopted by the Company regarding the subject matter hereof.

It is your responsibility to understand and follow this Policy. Insider trading is illegal and a violation of this Policy. In addition to your own liability for insider trading, the Company, as well as individual directors, officers and other supervisory personnel, could face liability. Even the appearance of insider trading can lead to government investigations or lawsuits that are time-consuming, expensive and can lead to criminal and civil liability, including damages and fines, imprisonment and bars on serving as an officer or director of a public company, not to mention irreparable damage to both your and the Company's reputation.

For purposes of this Policy, a Compliance Officer means either the Company's Chief Financial Officer or General Counsel (each, a "**Compliance Officer**"). A Compliance Officer may designate others, from time to time, to assist with the execution of his or her duties under this Policy.

B. POLICY STATEMENT

1. No Trading on Material Nonpublic Information. It is illegal for anyone to trade in securities on the basis of material nonpublic information. If you are in possession of material nonpublic information about the Company, you are prohibited from:

   a. using it to transact in securities of the Company;

   b. disclosing it to other directors, officers, employees, consultants, contractors or advisors whose roles do not require them to have the information;

   c. disclosing it to anyone outside of the Company, including family, friends, business associates, investors or consulting firms, without prior written authorization from a Compliance Officer; or

   d. using it to express an opinion or make a recommendation about trading in the Company's securities.

In addition, if you learn of material nonpublic information through your service with the Company that could be expected to affect the trading price of the securities of another company, you cannot (x) use that information to trade, directly or indirectly through others, or (y) provide that information to another person in order to trade, in the securities of that other company. Any such action will be deemed a violation of this Policy.

2. No Disclosure of Confidential Information. You may not at any time disclose material nonpublic information about the Company or about another company that you obtained in connection with your service with the Company to friends, family members or any other person or entity that the Company has not authorized to know such information. In addition, you must handle the confidential information of others in accordance with any related non-disclosure agreements and other obligations that the Company has with them and limit your use of the confidential information to the purpose for which it was disclosed.

If you receive an inquiry for information from someone outside of the Company, such as a stock analyst, or a request for sensitive information outside the ordinary course of business from someone outside of the Company, such as a business partner, vendor, supplier or salesperson, then you should refer the inquiry to a Compliance Officer. Responding to a request yourself may violate this Policy and, in some circumstances, the law. Please consult a Compliance Officer for more details.

3. Definition of Material Nonpublic Information. "**Material information**" means information that a reasonable investor would be substantially likely to consider important in deciding whether to buy, hold or sell securities or would view as significantly altering the total mix of information available in the marketplace about the issuer of the securities. In general, any information that could reasonably be expected to affect the market price of a security is likely to be material. Either positive or negative information may be material.

It is not possible to define all categories of "material" information. However, some examples of information that could be regarded as material include, but are not limited to:

a. financial results, key metrics, financial condition, earnings pre-announcements, guidance, projections or forecasts, particularly if inconsistent with the Company's guidance or the expectations of the investment community;

b. restatements of financial results, or material impairments, write-offs or restructurings;

c. changes in independent auditors, or notification that the Company may no longer rely on an audit report;

d. business plans or budgets;

e. creation of significant financial obligations, or any significant default under or acceleration of any financial obligation;

f. impending bankruptcy or financial liquidity problems;

g. significant developments involving business relationships, including execution, modification or termination of significant agreements or orders with customers, suppliers, distributors, manufacturers or other business partners;

h. significant information relating to the operation of any product or service, such as new products or services, major modifications or performance issues, defects or recalls, significant pricing changes or other announcements of a significant nature;

i. significant developments in research and development, relating to the Company's clinical studies, including, without limitation, status, results and communications with regulatory agencies, or relating to intellectual property;

j. significant legal or regulatory developments, whether positive or negative, actual or threatened, including litigation or resolving litigation;

k. major events involving the Company's securities, including calls of securities for redemption, adoption of stock repurchase programs, option repricings, stock splits, changes in dividend policies, public or private securities offerings, modification to the rights of security holders or notice of delisting;

l. significant corporate events, such as a pending or proposed merger, joint venture or tender offer, a significant investment, the acquisition or disposition of a significant business or asset or a change in control of the Company;

m. major personnel changes, such as changes in senior management or employee layoffs;

n. data breaches or other cybersecurity events;

o. updates regarding any prior material disclosure that has materially changed; and

p. the existence of a special blackout period.

"**Material nonpublic information**" means material information that is not generally known or made available to the public. Even if information is widely known throughout the Company, it may still be nonpublic. Generally, in order for information to be considered public, it must be made generally available through media outlets or SEC filings.

After the release of information, a reasonable period of time must elapse in order to provide the public an opportunity to absorb and evaluate the information provided. As a general rule, at least one Full Trading Day must pass after the dissemination of information before such information is considered public. A "**Full Trading Day**" has elapsed after trading in the Company's stock on The NASDAQ Stock Market has opened and subsequently closed.

As a rule of thumb, if you think something might be material nonpublic information, it probably is.
You can always reach out to a Compliance Officer if you have questions.

4. Designated Broker**.** Each market transaction in the Company's stock by a director, officer, employee or contractor must be executed by a broker designated by the Company unless the insider has received prior written a different broker. The Company's current designated broker is Morgan Stanley through its "Shareworks by Morgan Stanley" services only.

C. PERSONS COVERED BY THIS POLICY

This Policy applies to you if you are a director, officer, employee, consultant, contractor or advisor (for example, auditor or attorney) of the Company, both inside and outside of the United States. To the extent applicable to you, this Policy also covers your immediate family members, persons with whom you share a household, persons who are your economic dependents and any entity whose transactions in securities you influence, direct or control. You are responsible for making sure that these other individuals and entities comply with this Policy.

This Policy continues to apply even if you leave the Company or are otherwise no longer affiliated with or providing services to the Company, for as long as you remain in possession of material nonpublic information. In addition, if you are subject to a trading blackout under this Policy at the time you leave the

Company, you must abide by the applicable trading restrictions until at least the end of the relevant blackout period.

D. TRADING COVERED BY THIS POLICY

Except as discussed in Section H (*Exceptions to Trading Restrictions*), this Policy applies to all transactions involving the Company's securities or other companies' securities for which you possess material nonpublic information obtained in connection with your service with the Company. This Policy therefore applies to:

1. any purchase, sale, loan or other transfer or disposition of any equity securities (including common stock, options, restricted stock units, warrants and preferred stock) and debt securities (including debentures, bonds and notes) of the Company and such other companies, whether direct or indirect (including transactions made on your behalf by money managers), and any offer to engage in the foregoing transactions;

2. any disposition in the form of a gift of any securities of the Company;

3. any distribution to holders of interests in an entity if the entity is subject to this Policy; and

4. any other arrangement that generates gains or losses from or based on changes in the prices of such securities including derivative securities (for example, exchange-traded put or call options, swaps, caps and collars), hedging and pledging transactions, short sales and certain arrangements regarding participation in benefit plans, and any offer to engage in the foregoing transactions.

There are no exceptions from insider trading laws or this Policy based on the size of the transaction or the type of consideration received.

E. TRADING RESTRICTIONS

Subject to the exceptions set forth below, this Policy restricts trading during certain periods and by certain people as follows:

1. Quarterly Blackout Periods. Except as discussed in Section H (*Exceptions to Trading Restrictions*), all directors, officers, employees, consultants, contractors and advisors of the Company must refrain from conducting transactions involving the Company's securities during quarterly blackout periods. To the extent applicable to you, quarterly blackout periods also cover your immediate family members, persons with whom you share a household, persons who are your economic dependents, and any entity whose transactions in securities you influence, direct or control. Even if you are not specifically identified as being subject to quarterly blackout periods, you should exercise caution when engaging in transactions during quarterly blackout periods because of the heightened risk of insider trading exposure.

Quarterly blackout periods will start at the close of regular trading two weeks prior to the end of each fiscal quarter and will end after one Full Trading Day has elapsed following the public disclosure of financial results for that fiscal quarter.

The prohibition against trading during the blackout period also means that brokers cannot fulfill open orders on your behalf or on behalf of your immediate family members, persons with whom you share a household, persons who are your economic dependents, or any entity whose transactions in securities you influence, direct or control, during the blackout period, including "limit orders" to buy or sell stock at a specific price or better and "stop orders" to buy or sell stock once the price of the stock reaches a specified

price. If you are subject to blackout periods or pre-clearance requirements, you should so inform any broker with whom such an open order is placed at the time it is placed.

From time to time, the Company may identify other persons who should be subject to quarterly blackout periods.

1. Special Blackout Periods. The Company always retains the right to impose additional or longer trading blackout periods at any time on any or all of its directors, officers, employees, consultants, contractors and advisors. A Compliance Officer will notify you if you are subject to a special blackout period by providing to you a notice in writing or via email substantially in the form of Exhibit B. If you are notified that you are subject to a special blackout period, you may not engage in any transaction involving the Company's securities until the special blackout period has ended other than the transactions that are covered by the exceptions below. You also may not disclose to anyone else that the Company has imposed a special blackout period. To the extent applicable to you, special blackout periods also cover your immediate family members, persons with whom you share a household, persons who are your economic dependents, and any entity whose transactions in securities you influence, direct or control.

2. Regulation BTR Blackouts. Directors and officers may also be subject to trading blackouts pursuant to Regulation Blackout Trading Restriction, or Regulation BTR, under U.S. federal securities laws. In general, Regulation BTR prohibits any director or officer from engaging in certain transactions involving the Company's securities during periods when 401(k) plan participants are prevented from purchasing, selling or otherwise acquiring or transferring an interest in certain securities held in individual account plans. Any profits realized from a transaction that violates Regulation BTR are recoverable by the Company, regardless of the intentions of the director or officer effecting the transaction. In addition, individuals who engage in such transactions are subject to sanction by the SEC as well as potential criminal liability. The Company will notify directors and officers if they are subject to a blackout trading restriction under Regulation BTR. Failure to comply with an applicable trading blackout in accordance with Regulation BTR is a violation of law and this Policy.

F. PROHIBITED TRANSACTIONS

You may not engage in any of the following types of transactions other than as noted below, regardless of whether you have material nonpublic information or not.

1. Short Sales. You may not engage in short sales (meaning the sale of a security that must be borrowed to make delivery) or "sell short against the box" (meaning the sale of a security with a delayed delivery) if such sales involve the Company's securities.

2. Derivative Securities and Hedging Transactions. You may not, directly or indirectly, (a) trade in publicly-traded options, such as puts and calls, and other derivative securities with respect to the Company's securities (other than stock options, restricted stock units and other compensatory awards issued to you by the Company) or (b) purchase financial instruments (including prepaid variable forward contracts, equity swaps, collars and exchange funds), or otherwise engage in transactions, that hedge or offset, or are designed to hedge or offset, any decrease in the market value of Company equity securities either (i) granted to you by the Company as part of your compensation or (ii) held, directly or indirectly, by you.

3. Pledging Transactions. If you are required to comply with the blackout periods or pre-clearance requirements under this Policy, you may not pledge the Company's securities as collateral for any loan or as part of any other pledging transaction.

4. Margin Accounts. If you are required to comply with the blackout periods or pre-clearance requirements under this Policy, you may not hold the Company's common stock in margin accounts.

G. PRE-CLEARANCE OF TRADES

The Company's directors and officers and any other persons identified by a Compliance Officer as being subject to pre-clearance requirements must obtain pre-clearance prior to trading the Company's securities. If you are subject to pre-clearance requirements, you should submit a pre-clearance request in the form attached as Exhibit A to the Company's stock administration team ([***]) prior to your desired trade date. The pre-clearance request must be made on the form provided by the Company's stock administration team. The person requesting pre-clearance will be asked to certify that he or she is not in possession of material nonpublic information about the Company. A Compliance Officer is under no obligation to approve a transaction submitted for pre-clearance and may determine not to permit the transaction.

If a Compliance Officer is the requester, then the other Compliance Officer, or the Company's Chief Executive Officer, or their delegate, must pre-clear or deny any trade. At the recommendation of a Compliance Officer, trades made by the Chief Executive Officer and other officers also must be approved by a committee of the Company's board of directors.

All trades must be executed on the day of, or within the next two business days after, any pre- clearance.

Even after preclearance, a person may not trade the Company's securities if they become subject to a blackout period or aware of material nonpublic information prior to the trade being executed.

From time to time, the Company may identify other persons who should be subject to the pre- clearance requirements set forth above.

H. EXCEPTIONS TO TRADING RESTRICTIONS

There are no unconditional "safe harbors" for trades made at particular times, and all persons subject to this Policy should exercise good judgment at all times. Even when a quarterly blackout period is not in effect, you may be prohibited from engaging in transactions involving the Company's securities because you possess material nonpublic information, are subject to a special blackout period or are otherwise restricted under this Policy.

Other than the limited exceptions set forth below, any other exceptions to this Policy must be approved by a Compliance Officer, in consultation with the Company's board of directors or an independent committee of the board of directors.

The following are certain limited exceptions to the quarterly and special blackout period restrictions and pre-clearance requirements imposed by the Company under this Policy:

1. stock option exercises where the purchase price of such stock options is paid in cash and there is no other associated market activity;

2. purchases pursuant to the employee stock purchase plan; however, this exception does not apply to subsequent sales of the shares;

3. receipt and vesting of stock options, restricted stock units, restricted stock or other equity compensation awards from the Company;

4. net share withholding with respect to equity awards where shares are withheld by the Company in order to satisfy tax withholding requirements, (*x*) as required by either the Company's board of directors (or a committee thereof) or the award agreement governing such equity award or (*y*) as you elect, if permitted by the Company, so long as the election is irrevocable and made in writing at a time when a trading blackout is not in place and you are not in possession of material nonpublic information;

5. sell to cover transactions where shares are sold on your behalf upon vesting of equity awards and sold in order to satisfy tax withholding requirements, (*x*) as required by either the Company's board of directors (or a committee thereof) or the award agreement governing such equity award or (*y*) as you elect, if permitted by the Company, so long as the election is irrevocable and made in writing at a time when a trading blackout is not in place and you are not in possession of material nonpublic information; however, this exception does not apply to any other market sale for the purposes of paying required withholding;

6. transactions made pursuant to a valid 10b5-1 trading plan approved by the Company (see Section I (*10b5-1 Trading Plans*) below);

7. purchases of the Company's stock in the 401(k) plan resulting from periodic contributions to the plan based on your payroll contribution election; provided, however, that the blackout period restrictions and pre-clearance requirements do apply to elections you make under the 401(k) plan to (a) increase or decrease the amount of your contributions under the 401(k) plan if such increase or decrease will increase or decrease the amount of your contributions that will be allocated to a Company stock fund, (b) increase or decrease the percentage of your contributions that will be allocated to a Company stock fund, (c) move balances into or out of a Company stock fund, (d) borrow money against your 401(k) plan account if the loan will result in liquidation of some or all of your Company stock fund balance, and (e) prepay a plan loan if the pre-payment will result in the allocation of loan proceeds to a Company stock fund;

8. transfers by will or the laws of descent or distribution and, provided that prior written notice is provided to a Compliance Officer, distributions or transfers (such as certain tax planning or estate planning transfers) that effect only a change in the form of beneficial interest without changing your pecuniary interest in the Company's securities; and

9. changes in the number of the Company's securities you hold due to a stock split or a stock dividend that applies equally to all securities of a class, or similar transactions;

If there is a Regulation BTR blackout (and no quarterly or special blackout period), then the limited exceptions set forth in Regulation BTR will apply. Please be aware that even if a transaction is subject to an exception to this Policy, you will need to separately assess whether the transaction complies with applicable law.

I. 10B5-1 TRADING PLANS

The Company permits its directors, officers and employees to adopt written 10b5-1 trading plans in order to mitigate the risk of trading on material nonpublic information. These plans allow for individuals to enter into a prearranged trading plan as long as the plan is not established or modified during a blackout period or when the individual is otherwise in possession of material nonpublic information. To be approved

by the Company and qualify for the exception to this Policy, any 10b5-1 trading plan adopted by a director, officer or employee must be submitted to a Compliance Officer for approval and comply with the requirements set forth in the Requirements for Trading Plans attached as Exhibit C. If a Compliance Officer is the requester, then the Company's Chief Executive Officer, the other Compliance Officer or their delegate, must approve the written 10b5-1 trading plan.

J. SECTION 16 COMPLIANCE

All of the Company's officers and directors and certain other individuals are required to comply with Section 16 of the Securities and Exchange Act of 1934 and related rules and regulations which set forth reporting obligations, limitations on "short swing" transactions, which are certain matching purchases and sales of the Company's securities within a six-month period, and limitations on short sales.

To ensure transactions subject to Section 16 requirements are reported on time, each person subject to these requirements must provide the Company with detailed information (for example, trade date, number of shares, exact price, *etc.*) about his or her transactions involving the Company's securities.

The Company is available to assist in filing Section 16 reports, but the obligation to comply with Section 16 is personal. If you have any questions, you should check with a Compliance Officer.

K. VIOLATIONS OF THIS POLICY

Company directors, officers, employees, consultants, contractors and advisors who violate this Policy will be subject to disciplinary action by the Company, including ineligibility for future Company equity or incentive programs or termination of employment or an ongoing relationship with the Company. The Company has full discretion to determine whether this Policy has been violated based on the information available.

There are also serious legal consequences for individuals who violate insider trading laws, including large criminal and civil fines, significant imprisonment terms and disgorgement of any profits gained or losses avoided. You may also be liable for improper securities trading by any person (commonly referred to as a "tippee") to whom you have disclosed material nonpublic information that you have learned through your position at the Company or made recommendations or expressed opinions about securities trading on the basis of such information.

Please consult with your personal legal and financial advisors as needed. Note that the Company's legal counsel, both internal and external, represent the Company and not you personally. There may be instances where you suffer financial harm or other hardship or are otherwise required to forego a planned transaction because of the restrictions imposed by this Policy or under securities laws. If you were aware of the material nonpublic information at the time of the trade, it is not a defense that you did not "use" the information for the trade. Personal financial emergency or other personal circumstances are not mitigating factors under securities laws and will not excuse your failure to comply with this Policy. In addition, a blackout or trading-restricted period will not extend the term of your options. As a consequence, you may be prevented from exercising your options by this Policy or as a result of a blackout or other restriction on your trading, and as a result your options may expire by their term. In such instances, the Company cannot extend the term of your options and has no obligation or liability to replace the economic value or lost benefit to you. It is your responsibility to manage your economic interests and to consider potential trading restrictions when determining whether to exercise your options.

L. PROTECTED ACTIVITY NOT PROHIBITED

Nothing in this Policy, or any related guidelines or other documents or information provided in connection with this Policy, shall in any way limit or prohibit you from engaging in any of the protected activities set forth in the Company's Whistleblower Policy, as amended from time to time.

M. REPORTING

If you believe someone is violating this Policy or otherwise using material nonpublic information that they learned through their position at the Company to trade securities, you should report it to a Compliance Officer, or if a Compliance Officer is implicated in your report, then you should report it in accordance with the Company's Whistleblower Policy.

N. AMENDMENTS

The Company reserves the right to amend this Policy at any time, for any reason, subject to applicable laws, rules and regulations, and with or without notice, although it will attempt to provide notice in advance of any change. Unless otherwise permitted by this Policy, any amendments must be approved by the Board of Directors of the Company.

Nothing in this Insider Trading Policy creates or implies an employment contract or term of employment. Employment at the Company is employment at-will. Employment at-will may be terminated with or without cause and with or without notice at any time by the employee or the Company. Nothing in this Insider Trading Policy shall limit the right to terminate employment at-will. No employee of the Company has any authority to enter into any agreement for employment for a specified period of time or to make any agreement or representation contrary to the Company's policy of employment at-will. Only the Chief Executive Officer of the Company has the authority to make any such agreement, which must be in writing.

The policies in this Insider Trading Policy do not constitute a complete list of Company policies or a complete list of the types of conduct that can result in discipline, up to and including discharge.

EXHIBIT A

PRE-CLEARANCE CHECKLIST

Person proposing to trade: _____

Proposed trade (type and amount): _____

Manner of trade: _____

Proposed trade date: _____

Affiliate of the Company: ☐ Yes ☐ No

☐ **No blackout period.** The proposed trade will not be made during a quarterly or special blackout period.

☐ **No pension fund blackout under Regulation BTR.*** There is no pension fund blackout period in effect.

☐ **No prohibition under Insider Trading Policy.** The person confirmed that the proposed trade is not prohibited under the Insider Trading Policy.

☐ **No 10b5-1 trading plan**. The person does not have an outstanding 10b5-1 trading plan, and has confirmed that the proposed trade will not occur during the term of a 10b5-1 trading plan.

☐ **Section 16 compliance.*** The person confirmed that the proposed trade will not give rise to any potential liability under Section 16 as a result of matched past (or intended future) transactions.

☐ **Form 4 filing.*** A Form 4 has been or will be completed and will be timely filed with the SEC, if applicable.

☐ **Rule 144 compliance (*Response required only from affiliates of the Company*).**

- ☐ The "current public information" requirement has been met (*i.e.*, all 10-Ks, 10-Qs and other relevant reports during the last 12 months have been filed);
- ☐ The shares that the person proposes to trade are not restricted or, if restricted, the applicable holding period has been met;
- ☐ Volume limitations (greater of 1% of outstanding securities of the same class or the average weekly trading volume during the last four weeks) are not exceeded, and the person is not part of an aggregated group;
- ☐ The manner of sale requirements will be met (a "brokers' transaction" or directly with a market maker or a "riskless principal transaction"); and
- ☐ A Form 144, if applicable, has been completed and will be timely filed with the SEC.

☐ **Rule 10b-5 concerns.** The person has been reminded that trading is prohibited when in possession of any material nonpublic information regarding the Company that has not been adequately disclosed to the public. The individual has discussed with a Compliance Officer any information known to the individual or a Compliance Officer that the individual believes may be material.

***** Applies if the individual is a director or an officer subject to Section 16 of the Securities Exchange Act of 1934.

Date: _____ _____

(Signature of Compliance Officer)

_____

(Print name of Compliance Officer)

I am not aware of material nonpublic information regarding the Company. I am not trading on the basis of any material nonpublic information. The transaction is in accordance with the Insider Trading Policy and applicable law. I intend to comply with any applicable reporting and disclosure requirements on a timely basis. I understand that I must execute the trade by the end of the second trading day after the date on which the trade is cleared by a Compliance Officer. I understand that by signing below, I am not obligated to execute the trade.

_____

(Signature of person proposing to trade)

EXHIBIT B

FORM OF SPECIAL BLACKOUT NOTICE

[*COMPANY LETTERHEAD*]

[*Date*]

CONFIDENTIAL COMMUNICATION

Pacific Biosciences of California, Inc.
1305 O'Brien Drive
Menlo Park, CA 94025

Dear [*Insert Name*]:

Pacific Biosciences of California, Inc. (the "**Company**") has imposed a special blackout period in accordance with the terms of the Company's Insider Trading Policy (the "**Policy**"). Pursuant to the Policy, and subject to the exceptions stated in the Policy, you may not engage in any transaction involving the securities of the Company until you receive official notice that the special blackout period is no longer in effect.

You may not disclose to others the fact that a special blackout period has been imposed. In addition, you should take care to handle any confidential information in your possession in accordance with the Company's policies.

If you have any questions at all, please contact Brett Atkins at [***] or Susan Kim at [***].

Sincerely,

Compliance Officer

EXHIBIT C REQUIREMENTS FOR TRADING PLANS

For transactions under a trading plan to be exempt from (A) the prohibitions in the Insider Trading Policy (the "**Policy**") of Pacific Biosciences of California, Inc. (together with any subsidiaries, collectively the "**Company**") with respect to transactions made while aware of material nonpublic information and (B) the pre-clearance procedures and blackout periods established under the Policy, the trading plan must comply with the affirmative defense set forth in Exchange Act Rule 10b5-1 and must meet the following requirements (collectively, the "**Trading Plan Requirements**"):

1. The trading plan must be in writing and signed by the person adopting the trading plan.

2. The trading plan must be adopted at a time when:

   a. the person adopting the trading plan is not aware of any material nonpublic information; and

   b. there is no quarterly, special or other trading blackout in effect with respect to the person adopting the plan.

3. The trading plan must be entered in good faith and not as part of a plan or scheme to evade the prohibitions of Rule 10b5-1, and the person adopting the trading plan must act in good faith with respect to the trading plan.

4. The trading plan must include representations that, on the date of the adoption of the trading plan, the person adopting the trading plan:

   a. is not aware of material nonpublic information about the securities or the Company; and

   b. is adopting the trading plan in good faith and not as part of a plan or scheme to evade the prohibitions of Rule 10b5-1.

5. The person adopting the trading plan may not have entered into or altered a corresponding or hedging transaction or position with respect to the securities subject to the trading plan and must agree not to enter into any such transaction while the trading plan is in effect.

6. The first trade under the trading plan may not occur until the expiration of a cooling-off period consisting of the later of (a) 90 calendar days after the adoption of the trading plan and (b) two business days after the filing by the Company of its financial results in a Form 10-Q or Form 10-K for the completed fiscal quarter in which the trading plan was adopted (but, in any event, this required cooling-off period is subject to a maximum of 120 days after adoption of the trading plan).

7. The trading plan must have a minimum term of one year (starting from the date of adoption of the trading plan).

8. No transactions may occur during the term of the trading plan (except for the "Exceptions to Trading Restrictions" identified in the Policy and *bona fide* gifts) except for those transactions specified in the trading plan. In addition, the person adopting the trading plan may not have an outstanding (and may not subsequently enter into any additional) trading plan except as permitted by Rule 10b5-1. For example, as contemplated by Rule 10b5-1, a person may adopt a new trading plan before the scheduled termination date

of an existing trading plan, so long as the first scheduled trade under the new trading plan does not occur prior to the last scheduled trade(s) of the existing trading plan and otherwise complies with these guidelines. Termination of the existing trading plan prior to its scheduled termination date may impact the timing of the first trade or the availability of the affirmative defense for the new trading plan; therefore, persons adopting a new trading plan are advised to exercise caution and consult with a Compliance Officer prior to the early termination of an existing trading plan.

9. Any modification or change to the amount, price or timing of transactions under the trading plan is deemed the termination of the trading plan, and the adoption of a new trading plan ("**Modification**"). Therefore, a Modification must be submitted to a Compliance Officer for approval in accordance with Section I of the Policy and is subject to the same conditions as a new trading plan as set forth in Sections 1 through 8 herein.

10. Within the one year preceding the adoption or a Modification of a trading plan, a person may not have otherwise adopted or made a Modification to a plan more than once.

11. A person may adopt a trading plan designed to cover a single trade only once in any consecutive 12-month period except as permitted by Rule 10b5-1.

12. If the person that adopted the trading plan terminates the plan prior to its stated duration, he or she may not trade in the Company's securities until after the expiration of 30 calendar days following termination and then only in accordance with the Policy.

13. The Company must be promptly notified of any Modification or termination of the trading plan, including any suspension of trading under the trading plan.

14. The Company must have authority to require the suspension of the plan if there are legal regulatory or contractual restrictions applicable to the Company or the person that adopted the trading plan, or to require the cancellation of the trading plan at any time, subject to any reasonable broker notice requirements as may be set forth in the trading plan.

15. If the trading plan grants discretion to a stockbroker or other person with respect to the execution of trades under the trading plan:

a. the person adopting the trading plan may not exercise any subsequent influence over how, when or whether to effect purchases or sales under the plan;

b. the person adopting the trading plan may not confer with the person administering the trading plan regarding the Company or its securities; and

c. the person administering the trading plan must provide prompt notice to the Company of the execution of a transaction pursuant to the plan.

16. All transactions under the trading plan must be in accordance with applicable law.

17. Any exceptions to the Trading Plan Requirements must be approved by a Compliance Officer or, in the case of directors and officers who are subject Section 16 of the Securities Exchange Act of 1934, by a Compliance Officer in consultation with the Company's board of directors or an independent committee of the board of directors.

Exhibit C

18. The trading plan (including any Modification) must meet such other requirements as a Compliance Officer may determine.

19. Any trading plans adopted or modified prior to February 27, 2023 (the "**Effective Date**") are permitted to continue in place until all trades are executed thereunder or they expire by their terms ("**Grandfathered Plans**"). If the person undertakes a Modification of a Grandfathered Plan on or after the Effective Date, then the Modification must meet all of the requirements set forth herein.

Exhibit C

M E M O R A N D U M

To: Directors, officers, employees, consultants, contractors and advisors of Company

From: **Pacific Biosciences of California, Inc.**

Date: [*Date*]

Re: **Insider Trading Policy**

Attached is a copy of our Insider Trading Policy, which governs transactions involving trading in securities by directors, officers, employees, consultants, contractors and advisors of Pacific Biosciences of California, Inc. (together with any subsidiaries, collectively the "**Company**"). As described in the Insider Trading Policy, violations of insider trading laws can result in significant civil and criminal liability. Accordingly, please carefully review the materials provided.

After reading the Insider Trading Policy, please sign the receipt and acknowledgment at the bottom of this memorandum and return it to a Compliance Officer. The Insider Trading Policy applies to you regardless of whether you sign the receipt and acknowledgment at the bottom of this memorandum and return it to a Compliance Officer.

If you have any questions about the Insider Trading Policy or insider trading laws generally or about any transaction involving the securities of the Company, please contact Brett Atkins at [***] or Susan Kim at [***].

Attachment(s)

Receipt and Acknowledgment

- I have received and read the Insider Trading Policy.
- I have received satisfactory answers to any questions that I had regarding the Insider Trading Policy and insider trading in general.
- I understand and acknowledge that the Insider Trading Policy applies to me.
- I understand and agree to comply with the Insider Trading Policy.
- I understand that my failure to comply in all respects with the Insider Trading Policy is a basis for termination of my employment or other service relationship with the Company as well as any other appropriate discipline.
- I understand and agree that the Company may give stop transfer and other instructions to the Company's transfer agent with respect to transactions that the Company considers to be in contravention of the Insider Trading Policy.

_____ _____

Signature Date:

_____

Print name

Exhibit 21.1

LIST OF SUBSIDIARIES

Subsidiary name	Jurisdiction	Type
Pacific Biosciences International LLC	Delaware	Domestic
Pacific Biosciences Canada Limited	Canada (Ontario)	Foreign
Pacific Biosciences Germany GmbH	Germany (Munich)	Foreign
Pacific Biosciences Japan GK	Japan (Tokyo)	Foreign
Pacific Biosciences (Shanghai) Co., Ltd.	China (Shanghai)	Foreign
PacBio Singapore Pte. Limited	Singapore	Foreign
Pacific Biosciences UK, Ltd.	United Kingdom (London)	Foreign
Omniome, LLC	Delaware	Domestic
Circulomics Inc.	Maryland	Domestic
PacBio B.V.	Netherlands (Amsterdam)	Foreign
PacBio of Korea, Yuhan Hoesa	Korea	Foreign
Apton Biosystems LLC	Delaware	Domestic

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

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

(1) Registration Statements (Forms S-8 Nos. 333-241687, 333-251153, 333-253669, 333-255342, 333-259671, 333-261251, 333-263101, 333-265249, 333-270122, 333-277486 and 333-280353) pertaining to the Pacific Biosciences of California, Inc. 2010 Employee Stock Purchase Plan, the Pacific Biosciences of California, Inc. 2020 Equity Incentive Plan, the Pacific Biosciences of California, Inc. 2020 Inducement Equity Incentive Plan, and the Omniome Equity Incentive Plan of Pacific Biosciences of California, Inc.,

(2) Registration Statements and Post-Effective Amendments No. 1 to the Registration Statements (Forms S-8 Nos. 333-170211, 333-179810, 333-186065, 333-193437, 333-201678, 333-209157, 333-215746, 333-222696, 333-229368, 333-236061) pertaining to the Pacific Biosciences of California, Inc. 2010 Equity Incentive Plan, Pacific Biosciences of California, Inc. 2010 Employee Stock Purchase Plan, Pacific Biosciences of California, Inc. 2010 Outside Director Equity Incentive Plan, Pacific Biosciences of California, Inc. 2005 Stock Plan and Pacific Biosciences of California, Inc. 2004 Equity Incentive Plan, and

(3) Registration Statement (Form S-3 No. 333-279269) and related prospectus of Pacific Biosciences of California, Inc.

of our reports dated March 17, 2025, with respect to the consolidated financial statements of Pacific Biosciences of California, Inc. and the effectiveness of internal control over financial reporting of Pacific Biosciences of California, Inc. included in this Annual Report (Form 10-K) of Pacific Biosciences of California, Inc. for the year ended December 31, 2024.

/s/ Ernst & Young LLP

San Mateo, California
March 17, 2025

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a)/15d-14(a), AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Christian Henry, certify that:

1. I have reviewed this annual report on Form 10-K of Pacific Biosciences of California, 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(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: March 17, 2025

By: /s/ Christian O. Henry

Christian O. Henry

President, Chief Executive Officer and Interim Chief Financial Officer

(Principal Executive Officer and Principal Financial Officer)

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a)/15d-14(a), AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Christian Henry, certify that:

1. I have reviewed this annual report on Form 10-K of Pacific Biosciences of California, 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(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: March 17, 2025

By: /s/ Christian O. Henry

Christian O. Henry
President, Chief Executive Officer and Interim Chief Financial Officer
(Principal Executive Officer and Principal Financial Officer)

Exhibit 32.1

Certification of CEO Furnished 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 Pacific Biosciences of California, Inc. (the "Company") on Form 10-K for the period ended December 31, 2024, as filed with the Securities and Exchange Commission on the date hereof, I, Christian Henry, Chief Executive Officer of the Company, certify for the purposes of section 1350 of chapter 63 of title 18 of the United States Code, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge,

(i) the Annual Report of the Company on Form 10-K for the period ended December 31, 2024 (the "Report"), fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, and

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

Date: March 17, 2025

/s/ Christian O. Henry
Christian O. Henry
President, Chief Executive Officer and Interim Chief Financial Officer
(Principal Executive Officer and Principal Financial Officer)

Exhibit 32.2

Certification of CFO Furnished 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 Pacific Biosciences of California, Inc. (the "Company") on Form 10-K for the period ended December 31, 2024, as filed with the Securities and Exchange Commission on the date hereof, I, Christian Henry, Interim Chief Financial Officer of the Company, certify for the purposes of section 1350 of chapter 63 of title 18 of the United States Code, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge,

(i) the Annual Report of the Company on Form 10-K for the period ended December 31, 2024 (the "Report"), fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, and

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

Date: March 17, 2025

/s/ Christian O. Henry
Christian O. Henry
President, Chief Executive Officer and Interim Chief Financial Officer
(Principal Executive Officer and Principal Financial Officer)