

**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, 2016

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: 001-35348

Intermolecular, Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware

(State or Other Jurisdiction of Incorporation or Organization)

3011 N. First Street

San Jose, California

(Address of Principal Executive Offices)

20-1616267

(I.R.S. Employer Identification No.)

95134

(Zip Code)

(408) 582-5700

(Registrant's Telephone Number, Including Area Code)

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

Title of Each Class

Common Stock, \$0.001 par value

Name of Each Exchange on Which Registered

The NASDAQ Global Select Market

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

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

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

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

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

Large accelerated filer

Accelerated filer

Non-accelerated filer
(Do not check if a
smaller reporting company)

Smaller reporting company

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

As of June 30, 2016 (the last business day of the registrant's most recently completed second quarter), the aggregate market value of the registrant's common stock, par value \$0.001, held by non-affiliates of the registrant was \$37.8 million based upon the closing price reported for such date by the NASDAQ. Shares of the registrant's common stock held by executive officers and directors of the registrant and by each person who owned 10% or more of the outstanding common stock have been excluded because such persons may be deemed to be affiliates of the registrant. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of February 27, 2017, the number of outstanding shares of the registrant's common stock, par value \$0.001 per share, was 49,534,941.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Definitive Proxy Statement to be filed with the Commission pursuant to Regulation 14A in connection with the registrant's 2016 Annual Meeting of Stockholders, to be filed subsequent to the date hereof, are incorporated by reference into Part III of this Report. Such Definitive Proxy Statement will be filed with the Securities and Exchange Commission not later than 120 days after the conclusion of the registrant's fiscal year ended December 31, 2016. Except with respect to information specifically incorporated by reference in this Form 10-K, the Proxy Statement is not deemed to be filed as part of this Form 10-K.

INTERMOLECULAR, INC.
FORM 10-K FOR THE FISCAL YEAR ENDED DECEMBER 31, 2016

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

The following discussion and analysis should be read in conjunction with our audited consolidated financial statements and the related notes that appear elsewhere in this Annual Report on Form 10-K. This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act, particularly in Part I, Item 1: "Business," Part I, Item 1A: "Risk Factors" and Part 2, Item 7: "Management's Discussion and Analysis of Financial Condition and Results of Operations." These statements are often identified by the use of words such as "may," "will," "expect," "believe," "anticipate," "intend," "could," "should," "estimate," or "continue," and similar expressions or variations. All statements other than statements of historical fact could be deemed forward-looking, including, but not limited to: any projections of financial information; any statements about historical results that may suggest trends for our business; any statements of the plans, strategies, and objectives of management for future operations; any statements of expectation or belief regarding future events, technology developments, our customers and programs, expenses, liquidity, cash flow, growth rates or enforceability of our intellectual property rights and related litigation expenses; and any statements of assumptions underlying any of the foregoing. Such forward-looking statements are subject to risks, uncertainties and other factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by such forward-looking statements. Accordingly, we caution you not to place undue reliance on these statements. For Intermolecular, particular uncertainties that could affect future results include: our limited operating history; our ability to implement our new business model, which is dependent on, among other things, our ability to continuously grow and refresh our sales opportunities; fluctuations in quarterly results; our ability to achieve profitability, which is dependent on, among other things, (i) customer acceptance of our High-productivity combinatorial (or "HPC") platform as an alternative to conventional research and development, (ii) our ability to provide customers with the technological innovations they seek, (iii) our ability to evaluate engineered thin-film materials for next generation technology products, and (iv) our CDP customers' ability to commercialize products that use or incorporate IP or technology developed under our CDPs with them and our ability to monitor and enforce our related royalty agreements; our dependence on a limited number of customers; rapid technological changes and market cyclicity in the semiconductor industry; the early stage of development of the new market sectors and the challenges each industry within the sector faces; our ability to scale our development services to accommodate new customer engagements; our ability to make the substantial research and development investments required to stay competitive in our business and to be able to address a wider range of markets and customers; our ability to adequately protect against potential conflicts of interest and breaches of confidentiality among our customers; our ability to work cooperatively with our customers' materials suppliers and equipment manufacturers; the ability of our suppliers to deliver sufficient quantities of materials in a timely manner; our ability to manage our future growth, including an increasing number of employees, customers and programs; our ability to scale our development efforts and secure new programs with new or existing customers and the timing of those programs; the degree to which existing CDPs and programs are completed or expanded; our ability to realize any expected growth, synergies or benefits from acquisitions, strategic investments or joint ventures we may enter into; our potential need for additional capital to finance our business for purposes that could include potential acquisitions as well as repayment of debt; the potential loss of key personnel; our general ability to compete successfully in challenging markets; product liability for our HPC tools and for our customers' products that incorporate technology developed through our programs; the costs and risks associated with environmental, health and safety laws and regulations; global or regional economic, political and social circumstances and foreign currency exchange rates that could adversely affect our business; business interruptions such as earthquakes and other natural disasters; our ability to use our tax credit carryforwards; our ability to effectively protect and monetize our intellectual property, including patents, trade secrets and other proprietary information; any potential involvement in intellectual property litigation; and any potential payments to our customers resulting from our intellectual property indemnification policies and obligations. For a discussion of some of the factors that could cause actual results to differ materially from our forward-looking statements, see the discussion on risk factors that appears in Part I, Item 1A: "Risk Factors" of this Form 10-K and other risks and uncertainties detailed in this and our other reports and filings with the Securities and Exchange Commission, or SEC. The forward-looking statements in this Form 10-K represent our views as of the date of this Form 10-K. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Form 10-K.

PART I

ITEM 1. BUSINESS

Overview

We are a trusted partner for the innovation of advanced materials using high throughput experimentation. Advanced materials are critical to sustaining and advancing many industries, including the semiconductor, consumer electronics, aerospace and automotive industries. Using traditional experimental techniques, it can take many years to discover new advanced materials and many more years to deploy them in the marketplace. By leveraging our proprietary high productivity combinatorial (HPC™) platform and multi-disciplinary development team, we strive to enable our customers to more rapidly discover advanced materials and tailor them to suit their needs.

Our HPC platform, which consists of our Tempus™ processing tools, our unique, automated characterization methods, and our Informatics analysis software, is purpose-built for research and development (“R&D”) using combinatorial process systems in concert with established CVD, physical vapor deposition (“PVD”) and atomic layer deposition (“ALD”) deposition methods. Combinatorial processing is a methodology for experimentation, discovery and development that employs parallel and other high-throughput experimentation, which allows R&D experimentation to be performed at speeds up to 100 times faster than conventional R&D platforms, which are optimized for manufacturing rather than for R&D. Our development team included approximately 86 scientists and engineers (of whom approximately 63% have advanced degrees) or approximately 59% of our total headcount as of December 31, 2016.

We currently target large markets that rely on advanced materials for differentiation. Within these broad markets, we target customers that have track records of technological innovation, have significant materials-based R&D, and are pursuing technical advancements that are critical to their success and strategy. Each of Guardian Industries Corp. (“Guardian”), Micron Technology, Inc. (“Micron”), SK Hynix and Samsung accounted for 10% or more of our revenue for the year ended December 31, 2016. Each of Guardian, Micron and SK Hynix accounted for more than 10% of our revenue for the year ended December 31, 2015, and each of GLOBALFOUNDRIES, Guardian and Micron accounted for more than 10% of our revenue for the year ended December 31, 2014. To date, we have received the substantial majority of our revenue from customers in dynamic RAM (“DRAM”), flash memory, complex logic, materials and energy-efficient applications in flat glass.

Generally, our approach is most relevant to industries that rely heavily upon advanced thin film materials such as those achieved using PVD and ALD processing tools; however, our approach is also relevant to discovering and understanding advanced materials more broadly, including advanced bulk materials such as metal alloys. Historically, we have partnered most extensively in the semiconductor industry and particularly in the area of semiconductor memory such as DRAM and new non-volatile memory (“NVM”) technologies. Going forward, we plan to continue growing our footprint within semiconductors, while expanding our engagements in areas such as architectural glass, industrial coatings and alloys.

We have a flexible engagement model that allows our customers to choose how best to leverage our HPC platform and whether and how to work with our development team. Historically, we offered only multi-year collaborative development programs (“CDPs”), which typically required the customer to pay a fixed annual fee during the engagement and an ongoing royalty stream upon our customer’s commercialization of technology we developed under the program. Such engagements typically took nine to twenty-four months to negotiate and often were conducted at or below cost to secure the royalty obligation, which was contingent upon our customer’s successful introduction of the developed technology under the CDP.

As demonstrated by the relatively long sales cycle, the CDP model is subject to substantial resistance by many potential customers, and in particular semiconductor customers, who typically budget for R&D annually (not across multiple years) and are averse to paying ongoing royalties in addition to paying for the initial development work. The CDP model, if not priced to ensure profitability during a collaboration, is also subject to substantial risk because there is no guarantee of success in R&D. Accordingly, today our preferred approach is to engage with customers using a multi-year umbrella agreement that allows our customer during the term to selectively engage in multiple projects, each typically having a duration of six to twelve months and each subject to its own payment obligations, which can include success fees or royalties depending on how the project leverages our development team or

incorporates our background technology. Generally, if a project requires us to both direct the project and meet a target specification, as is typically the case for CDPs, we seek success fees and/or royalties in addition to insisting on being profitably compensated during the term of the project. Similarly, we seek an additional fee if a customer decides to commercialize our background technology. Our new, flexible engagement model has substantially reduced our sales cycle and improved our operating results.

We believe there are opportunities for us to develop our own advanced materials while preserving the trusted relationship with our customers. By pursuing the discovery and development of novel materials required for new applications, we believe we can effectively complement our current customers markets and serve additional industries such as automotive and aerospace. We believe that the licensing of our proprietary materials has potential to produce a more robust stream of royalty revenues than has been the case with CDPs, which rely upon our customers' commercialization of our technology.

Our Advantage

We have pioneered, developed and patented a proprietary platform and methodology for improving R&D in our target markets. Our strengths include:

- **Proprietary and patented HPC platform.** Our HPC platform employs proprietary and patented combinatorial methods to parallel and rapid-serial process up to 192 experiments on a single substrate as compared to conventional methods, which typically allow only a single experiment at a time.
- **Flexible technology platform configurable for and extendable to multiple markets.** Our HPC platform can be configured for many applications and extended to address a broad set of markets. Because of the similarities and synergies in materials deposition, manufacturing processes and device integration complexities across markets, our platform allows us to create unified workflows and support innovation across multiple markets.
- **Seasoned engineering team with multi-disciplinary expertise.** We have assembled a multi-disciplinary team of scientists and engineers with expertise across various disciplines, fields and technologies, including materials science, chemistry, physics, engineering, process equipment development, software and informatics, process development and integration, device technologies and device integration.
- **Deep expertise in advanced materials, processes, integration and device architectures.** We have accelerated innovation for a broad set of customers across multiple markets. Our team and our platform enable more rapid comprehension and learning about advanced materials, processes, integration and device architectures, some of which is applicable across markets. We generate our own IP such as materials characteristics, optimized processes and interoperability of systems and architectures that can be applicable in many fields of use and potentially generate license fees for Intermolecular.
- **Our revenue is built on customer programs and licensing fees.** Our customer programs may/are designed to generate predictable services revenue throughout the length of the engagement. In some cases, we also receive success fees or licensing fees for our work and technology. Licensing and royalty revenue over the past three years has accounted for 16%, 25% and 36% of revenue in the years ended December 31, 2016, 2015 and 2014, respectively. Included in licensing and royalty revenue, during the year ended December 31, 2014, is an accelerated payment in the amount of \$4.2 million (or nine percentage points of revenue) from a customer in connection with the suspension of program activities with that customer.

Embedded throughout our platform, which is a combination of hardware and software, our proprietary technology is based upon the parallel and/or rapid serial experimentation capabilities of combinatorial methods. HPC methods generally refer to techniques that vary materials, unit processes, process, and device integration sequences across multiple regions of one or more substrates, the output of which can then be evaluated in parallel or rapid serial fashion. Our informatics software and analytical methods characterize and analyze these combinations of materials, unit processes, process, and device integration sequences for the most promising solutions in a structured, automated and throughput-matched fashion. The relationship between materials, processes, integration and device output are established earlier in the development process, so that performance and manufacturability considerations are taken into account from the outset, instead of late in the R&D process.

We begin the development and discovery process by working with our customers to design experiments to synthesize, characterize and understand the material sets they want to explore. We then use our HPC platform to run those experiments. Once an experiment is processed, the data sets of each experiment are stored in a secure database and analyzed for desired properties. As with processing, our clean room labs include a broad array of characterization and metrology instruments and software to evaluate different properties under a wide variety of process conditions. These properties include physical, electrical, mechanical, thermal, chemical, and optical properties. In general, we are able to design, process and characterize tens to hundreds of experimental results in a single day.

Intellectual Property

Our success depends in part on our IP, including patents, trade secrets and know-how. We have patented and continue to seek patent protection for combinatorial methods and systems included in our HPC platform, and we will also seek patents for advanced materials and related technologies we develop outside of development services for our customers, e.g., technologies developed as internal research and development or part of a joint development effort with a partner. Historically, we also patented innovations arising from CDPs and will continue to do so to the extent required by agreements with our customers; however, generally, we no longer seek patent protection for technology arising from customer development services. Our intellectual property rights have terms that expire between 2017 and 2036.

Our Customers

Our customers serve large and growing markets, including the markets for semiconductors, flat glass, advanced alloys, light-emitting diodes (LEDs), flat-panel displays, and other applications. Success in these markets requires rapid and cost-effective product innovation, fast time-to-market, competitive pricing, production scalability and the ability to achieve specific product performance requirements. Our semiconductor customers' products are typically manufactured using thin-film deposition of advanced materials through customized processes that create a specific device architecture. These thin-film structures must then be scaled and integrated into cost-effective manufacturing processes to serve high-volume end markets. Conventional R&D approaches are increasingly challenged by the ever increasing device complexity and the market need to manage innovation in our target markets.

Empowered with our inter-disciplinary team and unique technology through our HPC platform, we believe we are well positioned to assist manufacturing industries that increasingly rely on the discovery and introduction of new materials, which traditionally have required intensive, time-consuming experimentation due to the fact that advanced materials are not well-understood and accurate, robust models do not exist. Ironically, the greater expertise and higher costs required to discover and introduce advanced materials have led to increased specialization among materials, capital equipment, semiconductor manufacturing and IC (integrated circuit) design companies. This specialization has left gaps in the industry knowledge base with respect to the complex interactions among materials science, process technology, device integration and the ability to scale to high-volume, high-performance IC production. Our HPC platform allows us to accelerate the rate of experimentation, and our inter-disciplinary team has been assembled to address such gaps.

The majority of our revenue during 2016 and 2015 came from our semiconductor customers, which represented a combined 74% and 77% of our total revenue during the years ended December 31, 2016 and 2015, respectively. The majority of our revenue during 2014 came from our three largest customers for that period, GLOBALFOUNDRIES, Guardian and Micron, which represented a combined 62% of our total revenue during the year ended December 31, 2014.

Research and Development

We conduct R&D activities for customers and for internal research and development on both workflow platform development and application R&D. As of December 31, 2016, we employed a research and development team of 105 full-time employees. This R&D team includes many experienced engineers, scientists and managers with advanced degrees from leading universities around the world and experience with leading chip manufacturers, solar PV companies and equipment and materials suppliers. We believe these R&D professionals on our team have

enabled us to develop our HPC platform, support customer programs, implement our technology roadmap rapidly and provide us with the foundation for our technology advancement in the future.

We devote a substantial portion of our resources to engineering of our next-generation platforms by integrating future generations of technology and developing standardized software and hardware modules. We work closely with multiple vendors during the development of new workflows or workflow modifications for use in our future platforms. The synergies among existing and new workflows often enable us to operate with adjacent vertical technologies. Our R&D expenses were \$28.1 million, \$28.6 million and \$24.3 million for the years ended December 31, 2016, 2015 and 2014, respectively; this represented approximately 59%, 63% and 51%, of our revenue in those years, respectively.

Competition

The principal capabilities required to be competitive in our market include technical expertise, processes and integration capabilities, diversity of platform offerings, development speed and performance, quality and reliability of engineers, depth of collaboration with customers and technical support. We believe we compete favorably with respect to these factors because of the breadth of capabilities of our HPC platform, the depth of multi-disciplinary expertise of our internal research team and external engineering teams who collaborate with customers and our use of combinatorial processing and throughput matched characterization and analysis. These differentiating factors allow us to explore more comprehensive materials sets and provide faster results to our customers. We are not aware of any companies that currently compete or have to date competed with us in the use of combinatorial methods for thin-film development; however, we do believe that we compete for the R&D resources of our customers with third-party IP licensors, equipment suppliers, industry consortia, alliance partnerships and university research teams. In addition, many of our customers design, develop, manufacture and market solutions based on their own unique device architectures and develop their own intellectual property in-house.

A portion of our revenue is generated from the sales of end products by our customers, and our competitive position therefore is dependent on their competitive positions. The markets for our customers' products that incorporate technology developed through our programs are intensely competitive and characterized by rapid technological change. These changes result in frequent product introductions, short product development cycles and increased product capabilities typically representing significant price and performance improvements.

Environmental Regulation

We are subject to various foreign, federal, state and local environmental laws and regulations governing, among other matters, emissions and discharges of hazardous materials into the air and water, the use, generation, storage, handling, transportation and disposal of, and exposure to, hazardous materials and wastes, remediation of contamination and employee health and safety. In addition, under certain of these environmental laws, liability can be joint and several and without regard to comparative fault. Our operations involve the use of hazardous materials and produce hazardous waste, and we could become liable for any injury or contamination that could arise due to such use or disposal of these materials. Failure to comply with environmental laws and regulations or to obtain or maintain required environmental permits could result in the imposition of substantial civil and criminal fines and sanctions, could require operational changes or limits or the installation of costly equipment or otherwise lead to third party claims. Future environmental laws and regulations, stricter enforcement of existing laws and regulations, or the discovery of previously unknown contamination or violations of such laws and regulations could require us to incur costs, or become the basis for new or increased liabilities or subject us to fines or other sanctions.

Employees

As of December 31, 2016, we had a total of 145 full-time employees. None of our employees are represented by a labor union, and we consider our employee relations to be good.

Financial Information about Segments and Geographic Areas; Backlog

We derive a significant portion of our revenue from customers that are based in foreign countries, particularly those based in Asia including Japan. Revenue generated from customers in Asia including Japan accounted for 51%, 35% and 10% of total revenue for the years ended December 31, 2016, 2015 and 2014, respectively. We expect that a significant portion of our total future revenue will continue to be derived from companies based in Asia and Japan.

For geographic information, see Note 11 to our consolidated financial statements included in this annual report on Form 10-K. We report all of our business activities as a single reporting segment.

Our backlog as of December 31, 2016 was approximately \$19.0 million. Our backlog as of December 31, 2015 was approximately \$27.2 million. As of December 31, 2014 we had backlog of approximately \$39.5 million.

Corporate and Available Information

We were originally incorporated as The BEP Group, Inc. in Delaware in June 2004. In November 2004, we changed our name to Intermolecular, Inc. We are headquartered in San Jose, California.

Our Internet address is www.intermolecular.com. Information included on our website is not part of this Form 10-K. We make available free of charge on our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports as soon as reasonably practicable after such material is electronically filed with or furnished to the SEC. See <http://ir.intermolecular.com>.

In addition, copies of our annual reports are available free of charge upon written request. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of that site is <http://www.sec.gov/cgi-bin/browse-edgar>.

ITEM 1A. RISK FACTORS

We describe our business risk factors below. You should carefully consider the risks described below together with the other information set forth in this Form 10-K, which could materially affect our business, financial condition or future results. The risks described below are not the only risks facing our company. Risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and operating results.

Risks Related to Our Business, Financial Condition and Results of Operations

We have a limited operating history and are substantially changing our business model, which makes it difficult for investors to evaluate our current business and future prospects.

We are substantially changing our business model while reducing our reliance on licensing and royalty revenues to achieve profitability, and we have not yet demonstrated that this new model can scale successfully. Additionally, we do not have a long history of operating results on which you can base your evaluation of our business. As a result, it may be difficult for analysts and investors to evaluate our future prospects. Furthermore, because of our limited operating history under the new model and because we are seeking to grow revenue by addressing industries we have not previously engaged, such as automotive and special metal alloys, we have limited experience in analyzing and understanding the trends that may emerge and affect our business. If we are unable to obtain significant licensing and royalty revenue from products that use or incorporate our proprietary technology, whether developed for our customers under CDP-type programs or developed independently by the Company, our financial condition and results of operations could be materially and adversely affected.

Under our new business approach, we have a tiered engagement model with customers where royalties or license fees are not included in most levels of customer engagements, and we may not be able to achieve significant profitability without these fees.

While we continue to offer royalties and license fees as a component of our compensation to customers who may prefer a CDP-type program, our typical customer engagement no longer requires such fees and often does not include them. Instead of relying upon future royalty payments to recover losses incurred in performing a project, we now seek appropriate compensation through value pricing of the basic offering and, upon occasion, the payment of one time success fees or commercialization fees when the details of the engagement permit them (for example, when the engagement requires use of our background technology in our customer's end product). In an effort to further improve our profitability and mitigate the potential loss of royalty revenue due to forgoing our prior CDP model, we are independently developing advanced materials for licensing. However, our new business model may not yield the level of profitability expected of our prior CDP model.

Under our new business model, customer engagements are typically 6 to 12 months in duration and maintaining and growing the business requires substantially more marketing and business development resources than under the CDP model. If we cannot begin new customer engagements as old customer engagements are ending, our revenues may fluctuate significantly from quarter to quarter.

Under our new business model, customer engagements typically involve a multi-year umbrella agreement under which our customer may have multiple active projects and can easily add new projects, if desired. Most projects are 6 to 12 months in duration. While our new approach has reduced our typical sales cycle for new customer engagements from 9 to 24 months to 3 to 12 months, the lack of multi-year projects requires a robust sales pipeline of customers to ensure that new projects begin as current projects end. Given the importance of current projects to our customers, it can be difficult to focus a customer on the next project in a timely manner in order to secure it without a gap between the end of one project and the beginning of the next. Also, customers may have no further need for us once a particular project ends. As a result of these changes to our business model, our reported backlog will likely be substantially reduced, and the success of our business will depend largely on our ability to constantly grow and refresh our sales opportunities.

Our operating results may fluctuate from quarter to quarter, which may make it difficult to predict our future performance.

Our revenue, expenses and operating results have fluctuated, and may in the future continue to fluctuate significantly from quarter to quarter due to a number of factors, many of which are outside our control. Factors that may contribute to these fluctuations include the following, as well as other factors described elsewhere in this Form 10-K:

- our dependence on a limited number of customers;
- the nature and length of our sales cycles for customer engagements, which make it difficult to predict the timing of new or expanded customer engagements;
- the additional development required by our customers to integrate technology developed under our prior CDPs ("CDP Technology") into their products, which makes it difficult to predict the timeframe in which CDP Technology will be available for commercialization;
- fluctuations in the volume and prices of products manufactured and sold by our customers that use or incorporate technology developed under our CDPs ("CDP Products") and that generate licensing and royalty revenue for us;
- our revenue mix, which may vary from quarter to quarter as (i) we enter into new customer arrangements; (ii) existing customer engagements, particularly for significant customers, are completed, extended, contracted or undergo a change in scope; (iii) licensing arrangements take effect; and/or (iv) we enter into IP sale transactions;
- the highly cyclical nature of and price volatility in the semiconductor industry;
- the financial stability of any of our customers;

- the timing and extent to which we enter into new customer engagements or complete, extend the duration, expand the scope or reduce the duration or scope of existing customer engagements;
- non-cash charges relating to stock-based compensation, amortization of intangible assets, write-down expenses related to inventory, and impairment expenses related to long-lived assets and our IP portfolio;
- any involvement in significant litigation, and in particular IP litigation;
- any payments resulting from our IP indemnification policies and obligations;
- any need for significant additional capital to finance our business;
- any delay in shipments caused by shortages of components used or incorporated in program services, design errors, manufacturing problems, or other difficulties or delays in completing contracted results; and
- business interruptions such as power outages, earthquakes and other natural disasters.

You should not rely on quarter-to-quarter comparisons to predict our future performance. Unfavorable changes in any of these or other factors may adversely affect our business, financial condition and results of operations.

We have incurred operating losses since our inception and may not be able to achieve or maintain sustained profitability

We have generated net losses each year since our inception, including \$15.4 million, \$21.0 million and \$21.8 million for the fiscal years ended December 31, 2016, 2015 and 2014, respectively. Our accumulated deficit as of December 31, 2016 was \$168.3 million. We will need to significantly increase revenue and operating margins to achieve sustained profitability, which we may not be able to accomplish.

Our ability to achieve and maintain profitability will depend, in large part, on our success in transitioning to our new business model, as well as the other risk factors in this Item 1A.

We may be unable to achieve broad customer acceptance of our HPC platform and approach as an alternative to conventional research and development activities.

Historically, semiconductor companies have conducted R&D activities internally using conventional research methods, and they have vigorously protected the confidentiality of their R&D activities. In order for us to increase revenue, we must convince these companies that our technology and capabilities justify collaborating with us on their basic R&D programs. This may require us to make significant investments in the expansion of our sales and marketing efforts. We must also convince potential customers in industries outside of the semiconductor industry that our HPC platform and approach are useful tools in their field. We may not achieve the levels of customer acceptance necessary for us to maintain and grow a profitable business. Failure to achieve the necessary customer acceptance to extend or add current or new customer relationships would adversely affect our revenue and profitability.

Our customers may not be successful in commercializing products that use or incorporate technology and IP developed under our CDPs with them.

While CDPs are no longer the focus of our customer engagement strategy, we continue to offer CDP-type programs for customers who prefer this model. However, we may not achieve significant revenue or profitability from a CDP-type program if the project to which we have devoted technology and significant resources fails to produce any measurable success or value to our customers in the form of differentiated technology and IP.

Further, even if we are successful in developing valuable technology for our CDP customers, they still face significant challenges in commercializing products that use or incorporate the technology. The markets for products related to our CDPs are intensely competitive and are characterized by rapid technological change. These changes result in frequent product introductions, short product life cycles and the necessity of continually increasing product

capabilities. We cannot assure you that our CDP customers will dedicate the resources necessary to successfully execute their business strategies for these products. Our CDP customers are not contractually obligated to us to make or sell any CDP Products. They may not have the financial strength to cost-effectively manufacture the CDP Products at high volume and in quantities sufficient to meet demand, or the competitiveness to price, market and sell the CDP Products in intensely competitive markets. They may experience delays in shipments caused by shortages of components incorporated in the CDP Products, design errors or other manufacturing problems associated with the CDP Products. A decline in demand or average selling prices in the end markets for CDP Products could result in declining sales revenue for our customers and could adversely affect our business and results of operations. Any failure of a customer to achieve market success for CDP Products could also negatively affect the customer's willingness to work with us on other collaborations and could more generally harm our reputation and business prospects. Even if a CDP customer is able to successfully commercialize a CDP Product, there may be a significant delay before we receive any licensing or royalty revenue due to the complexities inherent in production and manufacturing in our customers' target markets.

Existing and potential CDP customers may be resistant to paying license and royalty fees, and we may face challenges in monitoring and enforcing royalty agreements with existing customers.

Our royalty-bearing licenses with our CDP customers lay the framework for ongoing royalty revenue from CDP Products. Although our R&D activities under CDPs generate revenue for us, in order to achieve profitability we must be able to structure, negotiate and enforce agreements for the calculation and payment of higher-margin license and royalty revenue. Unless we adequately demonstrate the value of our platform to our customers and potential customers, we may face resistance to structuring royalty arrangements in the future that are acceptable to us, or our customers and our potential customers may not agree to enter into royalty-bearing licenses with us at all.

If we are able to negotiate royalty-bearing agreements, we will need to rely on our customers to make royalty payments on a timely basis. Licensing and royalty revenue we may receive in the future may be based on sales of CDP Products. In order to accurately report our financial results on a timely basis, we will need to receive timely, complete and accurate information from our customers regarding their sales and resulting payments they owe us.

If the information that we receive is not timely, complete or accurate, we may not receive the full amount of revenue to which we are entitled under these arrangements on a timely basis, which could result in adjustments to our financial results in a future period. Although we typically have audit rights with these customers, performing this type of audit could be harmful to our collaborative relationships, expensive and time-consuming and may not be sufficient to reveal any discrepancies in a timeframe consistent with our financial reporting requirements.

If a CDP to which we have devoted technology and significant resources fails to produce any measurable success or value to our customer in the form of differentiated technology and intellectual property that our customer can successfully commercialize, we may not earn licensing and royalty revenue sufficient to recover our upfront investment in the CDP, which could adversely affect our revenue and profitability.

As discussed above, while CDPs are no longer the focus of our customer engagement strategy, we continue to offer CDP-type programs to customers who prefer the CDP model. Under the CDP model, we are compensated with program revenues during the development stage, and we are owed royalties or success fees upon the successful commercialization of Program technology. The program revenue we receive from our customers during the development stage often is not sufficient for us to fully recover our costs and cash invested in HPC platforms dedicated to customer engagements, and the CDP business model relies on licensing and royalty revenue based on the sales by our customers in the end-markets of CDP Products. Our CDPs involve complex R&D, and our ability to develop the differentiated technology and intellectual property sought by our customers is inherently uncertain and difficult to predict, as is our customers' ability to commercialize such technology in a timely manner. If a CDP fails to produce any measurable value to a customer, or if we are otherwise not successful in maintaining and managing a CDP, we may not receive sufficient amounts of licensing and royalty revenue to recover our upfront investment in the CDP. Even if we are successful in delivering CDP Technology that a customer is able to commercialize, we will need to rely on our customers to bring the CDP Technology to market and to make royalty payments on a timely basis. Some of our CDP agreements include provisions that require minimum annual royalty payments to maintain exclusivity, and a customer may elect to forego such minimum payments and exclusivity, for example, if commercialization of the CDP Technology is delayed or uncertain. Licensing and royalty revenue we may receive

in the future may be based on sales of CDP Products. In order to accurately report our financial results on a timely basis, we will need to receive timely, complete and accurate information from our customers regarding their sales and resulting payments they owe us. If the information that we receive is not timely, complete or accurate, we may not receive the full amount of revenue to which we are entitled under these arrangements on a timely basis, which could result in adjustments to our financial results in a future period. Although we typically have audit rights with these customers, performing this type of audit could be harmful to our collaborative relationships, expensive and time-consuming and may not be sufficient to reveal any discrepancies in a timeframe consistent with our financial reporting requirements.

We depend on a limited number of customers, and a loss of any of them, or a significant reduction in revenue from any of them, would adversely affect our business, financial condition and results of operations.

Our customer base is highly concentrated. Revenue has historically come from a few customers, and we expect that revenue from a small number of customers will continue to account for a high percentage of our revenue for the foreseeable future. Our three largest customers accounted for 65% of our revenue in the fiscal year ended December 31, 2016, 65% of our revenue in the fiscal year ended December 31, 2015, and 62% of our revenue in the fiscal year ended December 31, 2014.

For each of the fiscal years ended December 31, 2016, 2015 and 2014, our largest customer during such year accounted for 38%, 36% and 35% of our revenue, respectively, and as of December 31, 2016, our largest customer accounted for 69% of our account receivables. Our concentration of customers is somewhat a reflection of the concentrated nature of manufacturers in the DRAM, flash memory and complex logic markets, and our revenue is and may continue to be heavily reliant on key high-volume customers. The loss of any of these customers or a decrease or delay in the manufacturing or sales volumes of the program services, or a renegotiation of any licensing or royalty revenue owed to us by our customers, or their failure to pay amounts due to us or renew, extend or maintain their existing relationships with us, and the related impact on our future anticipated licensing and royalty revenue, would materially and adversely affect our business, financial condition and results of operations, and we may not be able to replace the business from these customers. Additionally, any significant decrease in revenue from one or more key customers may require reductions in our employee workforce, which could reduce our ability to grow as well as expose us to an increased risk of employment and labor claims against us.

As an example, in June 2016, our customer Micron opted not to renew further development work related to DRAM and NVM under its CDP with us, and this resulted in a reduction in the scope of R&D activities and associated revenue, which adversely affected our business, financial condition and results of operations this fiscal year. Further, Guardian notified us they would not extend the term of our CDP with them after their scheduled contract expiration on January 31, 2017.

The semiconductor industry is highly cyclical, subject to significant downturns, price volatility, and other dynamics that make the industry very unpredictable. These factors can have a material adverse impact on our business both directly, and indirectly through the impact on our customers in the industry.

The semiconductor industry is highly cyclical and has been subject to significant economic downturns at various times, characterized by diminished product demand, accelerated erosion of average selling prices and production overcapacity. The semiconductor industry also periodically experiences increased demand and production capacity constraints. The timing and length of these cycles is extremely difficult to predict, which makes it challenging for us to forecast our operating results, make business decisions and identify risks that may affect our business, financial condition and results of operations. In addition, the semiconductor industry has historically experienced price volatility. Because the substantial majority of our revenue comes from customers in the semiconductor industry, we may experience significant fluctuations in operating results due to the cyclical nature and price volatility of the industry.

The industry has also been affected in recent years by uncertainty in the credit markets. In addition, future uncertainty may cause sudden changes in our customers' manufacturing capacity requirements and spending, which depend in part on capacity utilization, demand for products using or incorporating our technology by consumers, inventory levels relative to demand, and access to affordable capital.

Industry consolidation (including but not limited to the transition of semiconductor manufacturing to foundries and large-scale manufacturers, and the subsequent concentration of research and innovation in manufacturing process development) has increased in recent years, and we may continue to see consolidation in the future. This will likely result in fewer small companies, and more large companies with greater financial resources - companies that may be less likely to become our customers than smaller companies with more limited R&D resources. Furthermore, if any of our CDP customers are acquired, the acquirer may not continue to engage in a CDP with us or may choose to focus its product development and commercialization on technologies not covered by our CDP.

If we are unable to scale our development services to accommodate new customer engagements, our growth prospects would be limited and our business, financial condition and results of operations could be adversely affected.

We have limited space and internal capacity, both in terms of personnel as well as capital equipment resources, to meet new demands from our customers. If the demand for our services and products exceeds our capacity to meet such demand, we may be required to turn down potential opportunities, which would cause us to lose potential revenue, and our potential customers may take their business to a competitor or decide to develop or expand internal R&D capabilities. If we are unable to scale our development services to meet demand, our future growth may be hindered and our business and operating results could be adversely affected.

We may be unable to make the substantial R&D investments required to remain competitive in our business.

The industries we serve require substantial investment in R&D to develop and bring to market new and enhanced technologies and products. To remain competitive, we anticipate that we will need to continue to increase our levels of R&D expenditures to keep pace with the development efforts of our customers. We are continually working to develop and broaden our HPC platform, including our software and informatics capabilities, to address a wider range of markets and customers for multiple applications within our target markets. This is an extremely complex and costly process. We expect R&D expenses to continue to increase in absolute dollars for the foreseeable future, due to the increasing complexity and number of platforms and solutions we plan to develop both for our customers and internally, the expansion of our customer base, and any associated increase in upfront R&D costs. If we are unable to build new systems, or configure, modify, expand or customize our existing systems for these fields and develop our expertise to support these fields, our business growth might be limited, and our business and results of operations could be materially and adversely affected.

Although we are making progress in certain fields of technology, we have limited expertise and experience in other fields. We may be required to invest significantly greater resources than anticipated in our R&D efforts. If we are unable to develop expertise or experience in these fields, or if the investment of our resources in these fields is unsuccessful, our business and results of operations could be materially and adversely affected.

Our strategy includes conducting proprietary R&D efforts in collaboration with and on behalf of multiple customers. Any failure on our part to adequately protect against potential conflicts of interest and breaches of confidentiality by us would harm our reputation and our relationships with our customers, and our business prospects and operating results would be materially and adversely affected. Moreover, some customers may hesitate to grant us access to their proprietary information, which could impair our ability to provide value for such customers.

Our strategy includes conducting proprietary R&D efforts in collaboration with and on behalf of customers who in some cases may have overlapping interests and technologies. We seek to structure our collaborative agreements and business practices to minimize any potential conflicts among customers and the possibility of any breaches of confidentiality. We may need access to some of our customers' proprietary information, and they may be reluctant to share it with us because of the risk of a potential conflict between us and/or our customers and other potential customers and the risk of a breach of confidentiality. In an effort to address these significant potential conflicts of interest and confidentiality concerns, we have implemented internal restrictions on resource and information sharing. However, we cannot ensure that our existing and potential customers will perceive these measures to be adequate and effective, or that they will be, in all circumstances. Our failure to adequately and effectively address these concerns could result in our inability to attract new customers or retain existing customers,

or lead to our having incomplete information with respect to existing customers that could impair our ability to fully address the customers' needs and demonstrate the value of our technology to the customers. Even though we make significant efforts to isolate each development activity from other development activities, we may fail to meet our contractual confidentiality commitments to one or more customers. Moreover, even if we meet these commitments, conflicts of interest between a customer and us, or between or among customers, could nevertheless arise. In either event, we may become involved in a dispute with our customers regarding the solutions developed during the collaboration or the rights to these solutions, including possible litigation. Disputes of this nature could harm the relationship between us and our customers, have a material adverse effect on our ability to retain and to enter into new customer engagements, and cause our revenue and operating results to decline significantly.

Our business strategy requires us to evaluate, integrate and develop elements of our customers' value chains, including development and manufacturing processes. Our ability to evaluate these effectively may sometimes depend on the cooperation from our customers' materials suppliers and equipment manufacturers as well as access to their data and tools. If these third parties do not cooperate with us or provide us access to the necessary data, materials, tools or equipment, we may not be able to deliver effective solutions to our customers, which would adversely affect our business and results of operations.

We have to evaluate multiple elements of our customers' value chains to help them test and develop end products that meet their specifications, including the materials, tools and equipment used by them during the manufacturing process. Our ability to evaluate a customer's value chain effectively may sometimes depend on cooperation from such customer's materials suppliers and equipment manufacturers and on access to their data and tools. Our evaluation of the materials and equipment in the value chain must be unbiased to maintain credibility with our customers, and our evaluation sometimes results in recommendations that our customers change materials and tools providers or equipment manufacturers. Our recommendations may negatively impact our relationships with materials and tools providers and equipment manufacturers. Tensions in our relationships with these providers and manufacturers may cause these parties to limit or deny our access to their newest materials and equipment, which would in turn limit our ability to complete our development activities with our customers or control the quality of the combinatorial methods applied to our development efforts on their behalf, which would adversely affect our business and operations.

Our future growth may present challenges to our management and administrative systems and resources, which could adversely affect our business, financial condition and results of operations.

In order to successfully expand our business we will need to grow in all operational areas and to successfully integrate new employees. In particular, we expect growth as we expand our R&D capacity for current and additional customer engagements. The expansion of our business may place a strain on our management, as well as our operational systems and facilities, which may make it difficult for us to implement our business strategy. We have experienced employment and labor claims against us by our employees in the past, and we may experience such claims in the future.

To effectively manage our operations and any future growth, we must continue to expend funds to enhance our operational, legal, financial and management controls, reporting systems and procedures, and to attract and retain sufficient numbers of talented employees. If we are unable to implement these enhancements efficiently, effectively and quickly, we will not be able to successfully grow our business in the future. Our future operating results will also depend on our management's ability to:

- improve our sales, marketing and customer support programs;
- improve our R&D efforts;
- enhance our operational and financial control systems;
- expand, train and manage our employee base and promptly replace departing employees with key skills; and
- effectively address new issues related to our growth as they arise.

We may not manage our expansion successfully, which could materially and adversely affect our business, financial condition and results of operations.

Acquisitions, strategic investments, joint ventures or strategic asset sales may harm our business and operating results, cause us to incur debt or assume contingent liabilities, or dilute our stockholders.

We have made and may in the future make strategic investments, acquisitions, asset sales, or enter into joint ventures with third parties where there is an opportunity to expand the potential applications and reach of our capabilities, including our HPC platform. Exploring and implementing any investments, acquisitions, asset sales or joint ventures may place strain upon our ability to manage our future growth and may divert management attention from our core businesses. There are also other risks associated with this strategy. We cannot assure you that we will be able to make investments, acquire businesses or sell assets on satisfactory terms, that any business acquired by us or in which we invest will be integrated successfully into our operations or be able to operate profitably, or that we will be able to realize any expected growth, synergies or benefits from such investments, acquisitions, sales or joint ventures.

Our relative inexperience in effecting such transactions heightens these risks. In addition, to finance any acquisitions, investments or joint ventures, we may utilize our existing funds, or might need to raise additional funds through public or private equity or debt financings. We may be unable to obtain financing to fund future acquisitions or investments on attractive terms, or at all. Additionally, equity financings may result in dilution to our stockholders. We cannot predict the number, timing or size of investments, acquisitions or joint ventures, or the effect that any such transactions might have on our operating results.

We may need additional capital in the future to finance our business.

Our future capital requirements may be substantial as we continue to develop our business and expand our collaborative development efforts. In particular, we may be required to raise additional capital if we choose to expand our business through strategic investments or acquisitions. Our need for additional capital will depend on many factors, including our rate of revenue growth, our expansion of our sales and marketing activities and overhead expenses, the timing and extent of our spending to support our R&D efforts and our ability to expand customer engagements in the semiconductor and clean energy industries, whether we are successful in obtaining anticipated levels of payments from customers, the financial stability of our customers, whether we can enter into additional collaborations in our target industries and markets, the progress and scope of collaborative R&D projects performed by us and our customers, the effect of any acquisitions of other businesses or technologies that we may make in the future, the filing, prosecution, maintenance and enforcement of patent claims, how much we need to develop or enhance our solutions or HPC platform, and any necessary responses to competitive pressures.

If our capital resources are insufficient to meet our capital requirements, and our revenue is insufficient to support any of these activities, then we will have to raise additional funds. If future financings involve the issuance of equity securities, our then-existing stockholders may suffer dilution. If we raise additional future debt financing, we may be subject to restrictive covenants, which would further limit our ability to conduct our business. We may not be able to raise sufficient funds on terms that are favorable to us, if at all. If we fail to raise sufficient funds and continue to incur losses, our ability to fund our operations, take advantage of strategic opportunities, develop products or technologies or otherwise respond to competitive pressures could be significantly limited. If this happens, we may be forced to delay or terminate R&D programs, curtail or cease operations, obtain funds through collaborative and licensing arrangements that may require us to relinquish commercial rights, or grant licenses on terms that are not favorable to us. If adequate funds are not available, we may not be able to successfully execute our business plan or continue our business.

If we lose one or more of our key personnel without obtaining adequate replacements in a timely manner, or if we are unable to retain and recruit skilled personnel, our operations could become disrupted and the growth of our business could be delayed or restricted.

Our success depends, in large part, on the continued contributions of our senior management team. None of our senior management is bound by written employment contracts to remain with us for a specified period. The loss of any of our senior management could harm our ability to implement our business strategy and respond to the

rapidly changing market conditions in which we operate. Upon hiring or promotion, new senior management personnel must spend a significant amount of time learning our technology, business model and management systems and their new roles, in addition to performing their regular duties.

Accordingly, we may experience disruption to our ongoing operations. Moreover, the loss of a member of our senior management or our professional staff would require the remaining management to divert attention to seeking a replacement.

Our future success and competitiveness depends on our ability to retain and motivate our unique team of highly skilled scientists and engineers, and to recruit and hire similarly qualified replacements for any who leave the company. These scientists and engineers have expertise across various disciplines, fields and technologies, including engineering, materials science, process development and integration, equipment, device process technologies and device integration. In addition, as we grow, we will have to continue to retain, attract and motivate qualified and talented personnel, including our scientists and engineers, management, sales and marketing and legal and finance personnel. The loss of key scientists or engineers or other personnel could have an adverse effect on our ability to deliver results to a customer in a timely manner or at all. We do not know whether we will be able to retain all of these employees or hire appropriate replacements for any who leave the company, as we continue to pursue our business strategy. Competition for personnel is intense in the Silicon Valley.

We may encounter difficulties in hiring qualified scientists and engineers because there is a limited pool of scientists and engineers with the specialized expertise required to understand and implement our platform in conjunction with our customers. Further, we may have difficulty or delays in obtaining visas permitting entry for some of our employees who are foreign nationals into the United States, and in obtaining visas permitting entry into other key countries for several of our key personnel, which could disrupt our ability to strategically locate our personnel. The loss of the services of key employees or our inability to retain, attract and motivate qualified scientists and engineers could have a material adverse effect on our business, financial condition and results of operations.

If we cannot compete successfully in our industry, our results of operations and financial condition would be adversely affected.

Competition in our markets may intensify in the future, which could slow our ability to grow or execute our strategy and could lead to increased pricing pressure, negatively impacting our revenue and ability to attain and maintain profitability. Our current and potential customers may choose to develop their own methods to accelerate R&D activities, including their own combinatorial development methods, particularly if we are slow in developing or deploying our solutions or improving them to meet market needs. We currently face indirect competition from the internal R&D groups of our current and potential customers, particularly those of our customers who work with us to develop knowledge of combinatorial methods and who may then use our methods independently. They often compete with each other and with us in various applications. Our customers are generally much larger and have significantly greater resources than us. We also face indirect competition from university collaborations, consortia and alliance partnerships. In addition, there may be other providers of high-throughput or combinatorial solutions for the design of and accelerating R&D relating to integrated devices of which we are not aware, and there may be new entrants to the industry in the future, particularly if acceptance of these solutions grows. In addition, we believe that the demand for solutions that address the need for better integration between the design and manufacturing processes may encourage direct competitors to enter into our market. Other potential competitors include fabrication facilities that may decide to offer solutions competitive with ours as part of their value proposition to their customers. If these potential competitors change the pricing environment or are able to attract industry partners or customers faster than we can, we may not be able to grow and execute our strategy as quickly or at all.

Compliance with environmental, health and safety laws and regulations could increase costs or cause us to incur substantial liabilities.

We are subject to various foreign, federal, state and local environmental laws and regulations governing emissions and discharges of hazardous materials into the air and water; the use, generation, storage, handling, transportation and disposal of, and exposure to, hazardous materials and wastes; remediation of contamination; and employee health and safety. In addition, under certain of these environmental laws, liability can be joint and several

and without regard to comparative fault. Our operations involve the use of hazardous materials and produce hazardous waste, and we could become liable for any injury or contamination that could arise due to such use or disposal of these materials. Failure to comply with environmental laws and regulations could result in the imposition of substantial civil and criminal fines and sanctions, could require operational changes or limits or the installation of costly equipment or otherwise lead to third party claims. Future environmental laws and regulations, stricter enforcement of existing laws and regulations, or the discovery of previously unknown contamination or violations of such laws and regulations could require us to incur costs or become the basis for new or increased liabilities, which could impair our operations and adversely affect our business and results of operations.

Global or regional economic, political and social conditions and foreign currency exchange rates could adversely affect our business, financial condition and results of operations.

We operate in multiple jurisdictions throughout the world and are subject to foreign business, political and economic risks. In particular, we are subject to risks arising from adverse changes in global economic conditions. Global economic uncertainties in the key markets of many of our customers may cause our customers to delay or reduce R&D and technology purchases and investments. The impact of this on us is difficult to predict, but if businesses require fewer program services, or if consumers defer purchases of new products that use or incorporate technology developed under our program services and CDPs, our revenue could decline. A decline in revenue would have an adverse effect on our results of operations and our financial condition.

In addition, some of our largest customers are located outside of the United States, primarily in Asia, which further exposes us to foreign risks. Also, a substantial portion of the consumer products market that serves as the end-market for the products we help our customers to develop is located in Asia. As a result, our operations are subject to substantial influence by political and economic conditions. Reduced end user demand as well as disruptions to the supply chain for our customers resulting from these or other events could lead to a reduction in our revenue and an adverse impact on our financial condition. Our licensing and royalty revenue is derived from sales of products that use or incorporate technology developed under our CDPs. To the extent that sales for these products are denominated in U.S. dollars, the currency conversion and foreign exchange laws and regulations in the foreign countries in which we do business may delay or preclude us from receiving payment from our customers, which would have an adverse impact on our operations and financial condition. Additionally, to the extent that sales for these customer products are denominated in a foreign currency, an increase in the value of the U.S. dollar relative to such foreign currencies could also adversely affect our licensing and royalty revenue irrespective of the volume of such products sold, which could adversely affect our business and operating results.

We expect that a significant portion of our total future revenue will continue to be derived from companies based in foreign countries. If the U.S. dollar increases in value relative to the currencies in any of these countries, the cost of our program services and CDPs, which have historically been billed in U.S. dollars, will be more expensive to existing and potential customers in those countries, which could adversely affect our ability to generate new or expand existing program services and CDPs.

We are also subject to general geopolitical risks in connection with international operations, such as political, social, and economic instability, terrorism, interference with information or communication of networks or systems, potential hostilities, changes in diplomatic and trade relationships, and disease outbreaks, and any disruptive effect these events would have on our business operations. For example, an imposition of economic sanctions by the U.S. government against the Russian Federation may have an adverse impact on our ability to do further business with one of our current customers, Ulyanovsk Center for Technology Transfer of the Russian Federation. Although to date we have not experienced any material adverse effect on our operations as a result of these types of factors, we cannot assure investors that these factors will not have a material adverse effect on our business, financial condition, and operating results or require us to modify our current business practices. Inconsistencies among, and unexpected changes in, a wide variety of foreign laws and regulatory environments with which we are not familiar, including, among other issues, with respect to employees, currency controls, foreign exchange, protection of our intellectual property, and a wide variety of operational regulations and trade and export controls under domestic, foreign, and international law may also have unexpected, adverse impacts on our operations and financial condition.

Business interruptions could delay or prevent our business activities, which could have a material adverse effect on our business, financial condition and results of operations.

Our headquarters are located in the San Francisco Bay Area near known earthquake fault zones and are vulnerable to significant damage from earthquakes. We are also vulnerable to other types of natural disasters and other events that could disrupt our operations, such as cybersecurity breaches, terrorist acts and other events that may be beyond our control. We do not carry insurance for earthquakes and we may not carry sufficient business interruption insurance to compensate us for losses that may occur. Our business can also be impacted if our customers experience business interruptions as a result of natural disasters or other disruptive events. Any losses or damages we or our customers incur could have a material adverse effect on our cash flows and success as an overall business.

Our ability to use our net operating loss carryforwards to offset future taxable income, and our ability to use our tax credit carryforwards, may be subject to certain limitations.

In general, a corporation that undergoes an “ownership change” under Section 382 of the Internal Revenue Code is subject to limitations on its ability to utilize its pre-change net operating loss carryforwards (NOLs) to offset future taxable income and its ability to utilize tax credit carryforwards. As of December 31, 2016, we reported U.S. federal NOLs in the amount of \$105.5 million. In general, an “ownership change” occurs if the aggregate stock ownership of certain stockholders (generally, 5% shareholders, applying certain aggregation and look-through rules) increases by more than 50 percentage points over such stockholders' lowest percentage ownership during the testing period (generally, three years). We have not determined whether an ownership change has occurred in the past. If we have experienced an ownership change in the past, our ability to utilize NOLs and tax credit carryforwards could be limited. Furthermore, future changes in our stock ownership, such as certain stock issuances and transfers between stockholders, some of which changes are outside of our control, could result in ownership changes under Section 382 of the Internal Revenue Code. For these reasons, we may not be able to utilize a material portion of our NOLs and tax credit carryforwards, even if we attain profitability.

Specific Risks Relating to Our Intellectual Property

We may be unable to effectively protect or monetize our intellectual property, which would negatively affect our ability to compete.

We depend on our proprietary HPC platform for our success and ability to compete. If others are able to reproduce our technology, our business will suffer significantly unless we can prevent them from competing with us. As of December 31, 2016, we owned or had exclusive licenses to 677 U.S. patents and patent applications (some of which also have foreign counterparts), which we believe protect our rights in our HPC platform and our rights in the technology developed internally and under our customer engagements. While we have been filing patent applications to seek protection for the further advancements of our HPC platform, patent laws provide only limited protection. Furthermore, we may not be able to sustain the high rate of patenting we maintained in the previous three years due to the expense and resource-intensiveness of the patenting process. Finally, we actively manage our patent portfolio and regularly discontinue pursuing patent protection for inventions we believe are not or will not be commercially relevant or significant, and we could be mistaken in our judgments about which patents are valuable and which are not.

For these and other reasons, we cannot assure you that we have sought or that we will seek patent protection of all our rights in our HPC platform and our rights in the technology developed internally and under our customer engagements in all jurisdictions. We also cannot assure you that all maintenance fees have been paid or that all filings have been made with the appropriate regulatory or governmental authorities with respect to any IP rights (including patents) registered or applied for outside of the U.S. In addition, patent protection in foreign countries may be limited or unavailable where we need this type of protection.

The patent positions of technology companies, including ours, are often uncertain and involve complex legal and factual questions. We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies are covered by valid and enforceable patents, or are effectively maintained as trade secrets or other forms of legal protection. We apply for patents covering our HPC platform and further advancements of our HPC platform as we deem appropriate. However, we may not obtain patents on all

inventions for which we seek patents. Further, any patent claims we file for may be challenged during prosecution or any patent claims we are issued may be challenged after issuance. This may result in the claims being narrowed in scope or extinguished as a result of these challenges. Additional uncertainty may result from the recent and ongoing consideration and passage of patent reform legislation by the United States Congress, legal precedent as handed down by the United States Federal Circuit and Supreme Court as they determine legal issues concerning the scope and construction of patent claims, and inconsistent interpretation of patent laws by the lower courts. For these reasons, among others, our existing patents and any future patents we obtain may not be sufficiently effective in preventing others from practicing our technologies or from developing similar or superior products. In that case, our revenue and operating results could decline.

Historically, our customer engagement strategy included obtaining patent protection for technology developed for our customers under CDPs, and a portion of our revenue from our CDP customers derives from the licenses granted by us to our customers under these patents. In certain instances our ability to obtain patent protection may require customer approval. If the customer does not provide its approval, we cannot proceed with patent protection and the technology will be subject to trade secret protection only. If we are unable to obtain patent protection, we would not be able to enforce patent rights to the technologies in question. While the CDP model remains available to customers who prefer it, our baseline customer engagement strategy no longer includes a patent licensing component but instead relies upon a combination of value pricing and certain additional fees that can be triggered by technical success and/or commercial adoption of our technology.

In most instances, with respect to patents obtained for technology developed in collaboration with our customers, we grant our customers an exclusive license within a specific field-of-use under these patents thus reserving for us the right to grant licenses to third parties outside such field-of-use. In some cases, our customers must pay minimum annual royalties to maintain exclusivity, and the failure to make such minimum payments results in the license becoming non-exclusive. While a license is exclusive, we cannot grant licenses to third parties within the customer's exclusive field-of-use and may not be able to grant such third party licenses outside the field-of-use, which would not allow us to realize additional revenue from licensing such patents.

We have developed in the past, and may develop in the future, patented technology 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 action is necessary because 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 technology may be subject to restrictions on transfer to foreign entities, and some U.S. government-funded data may be subject to public disclosure under the Freedom of Information Act.

Many of our customers and competitors have significant operations outside the United States. However, foreign laws may not afford us sufficient protections for our intellectual property, and we may not always seek patent protection outside the United States. We believe that our success depends, in part, upon our ability to obtain international protection for our IP rights. However, the laws and judicial systems of some foreign countries may not be as comprehensive as those of the United States and may not be sufficient to protect or enforce our proprietary rights abroad. Accordingly, our international competitors could obtain foreign patent protection for, and market overseas, products and technologies for which we are seeking patent protection in the United States, and may also be able to successfully enforce such patents in such foreign countries against us or against our customers.

Confidentiality agreements with employees and others may not adequately prevent disclosures of trade secrets and other proprietary information.

We rely in part on confidentiality and trade secret protection to protect our confidential and proprietary information and processes. However, trade secrets are difficult to protect. We have taken measures to protect our trade secrets and proprietary information, but these measures may not be effective. We require new employees and consultants to execute confidentiality agreements upon the commencement of an employment or consulting arrangement with us. These agreements generally require that all confidential information developed by the

individual or made known to the individual by us during the course of the individual's relationship with us be kept confidential and not disclosed to third parties. These agreements also generally provide that all rights in and to the inventions conceived by the individual in the course of rendering services to us shall be assigned to us. Nevertheless, employees, collaborators or consultants may still disclose or misuse our confidential information, and we may not be able to meaningfully protect such information or our trade secrets. In addition, others may independently develop substantially equivalent information or techniques or otherwise lawfully gain access to our trade secrets, and thereafter communicate this information to others without maintaining its confidentiality. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to obtain or maintain trade secret protection or enforce our trade secrets could adversely affect our competitive business position.

Significant litigation over intellectual property in the industry may cause us to become involved in costly and lengthy litigation, which could subject us to liability, require us to stop licensing our developed technology or force us to develop new technology.

Whether or not patents are granted to us, litigation may be necessary to enforce our IP rights, to defend against a claim of infringement of IP rights of others or to determine the validity and scope of our proprietary rights or the proprietary rights of others. Because infringement is a fact-intensive inquiry, and because patent applications in the United States and many foreign jurisdictions are typically not published until eighteen months after filing (or, in some cases, are not published until they issue as patents), we cannot be certain that we do not now, and will not in the future, infringe a third party's patent rights. We may also become party to claims by our customers to IP rights developed by us in connection with a CDP. If our customers become involved in disputes with third parties over allegations that our customers' practice of our IP rights infringes the IP rights of such third parties, it may also become necessary for us to become involved in such disputes.

Any claim, even if without merit, could be time consuming to defend, result in costly litigation, or require us to enter into licensing agreements, resulting in unexpected operating costs and reduction in our operating profit. Moreover, our opponents in any litigation may have significantly more resources with which to defend against or assert claims in the litigation. A successful claim of infringement against us in connection with the use of our technologies could force us to stop using our technologies that incorporate the infringed IP; pay substantial monetary damages or royalties; grant cross-licenses to third parties relating to our own IP; obtain a license from the owner of the infringed IP, which may not be available to us on acceptable terms or at all; or re-engineer our platform or products to avoid further IP infringement, which may be technically impossible or commercially infeasible. The occurrence of any of these eventualities could adversely affect our business. Even if we are successful in defending such a claim, litigation could also divert our resources, including our managerial and engineering resources. Any infringement claim or other litigation against or by us could have a material negative effect on our business.

Our intellectual property indemnification policies and obligations may adversely impact our business and operating results.

A third party asserting ownership or other rights to technology developed under our customer engagements could result in our customers becoming the target of litigation, and we may be bound to indemnify our customers under the terms of our license agreements. These obligations could result in substantial expenses to us, which could have a material adverse effect on our business, financial condition and results of operations. In addition to the time and expense required for us to satisfy our support and indemnification obligations to our customers, any litigation could severely disrupt or shut down the business of our customers, which in turn could damage our relations with them and have a material adverse effect on our reputation, business, financial condition and results of operations.

Risks Related to Ownership of Our Common Stock

Our stock price may be volatile, which may cause the value of our common stock to decline and subject us to securities class action litigation.

The market price of our common stock could be subject to significant fluctuations. Market prices for securities of early stage companies have historically been particularly volatile. The stock markets in general have experienced price and volume fluctuations that have affected, and continue to affect, the market prices of equity securities of

many companies. A portion of most future fluctuations in our stock price will likely be related to the risk factors described in this section. However, price fluctuations may be disproportionate, or even unrelated, to our operating performance. In the past, many companies that have experienced volatility in the market price of their stock have become subject to securities class action litigation. We may be the target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business. Factors that could contribute to volatility in our stock price include but are not limited to the following:

- fluctuations in our financial results or outlook, or those of our customers or of companies perceived to be similar to us;
- changes in estimates of our financial results or recommendations by securities analysts;
- changes in market valuations of similar companies;
- changes in our capital structure, such as future issuances of securities or the incurring of debt;
- announcements by us or our competitors of significant contracts, acquisitions or strategic alliances;
- litigation involving us, our general industry or both;
- additions or departures of key personnel;
- regulatory developments in the U.S., countries in Asia, and/or other foreign countries;
- significant fluctuations in daily trading volume of our stock due to selling of large blocks of stock by significant stockholders;
- investors' general perception of us; and
- general economic and political conditions in the U.S. and globally, such as recessions, interest rate changes and international currency fluctuations.

The bid price of our common stock closed below \$1.00 per share on multiple days during 2016 and thus far in 2017, and we cannot assure investors that we will be able to remain in compliance with the continued listing requirements of the NASDAQ Global Select Market.

Our common stock is listed on the NASDAQ Global Select Market, and as such, is subject to various requirements for continued listing under the rules of the NASDAQ Stock Market (the "Listing Rules"), including the \$1.00 per share minimum bid price requirement set forth in Rule 5450(a)(1) of the Listing Rules (the "Bid Price Requirement"). Under Rule 5810(c)(3)(A) of the Listing Rules, we will be found in violation of the Bid Price Requirement if the bid price of our common stock closes below \$1.00 per share for 30 consecutive business days. Though the Listing Rules generally provide for a cure period of 180 days (which may be extended for an additional 180 days under certain circumstances), our common stock would ultimately be subject to delisting if we were unable to regain compliance with the Bid Price Requirement within the applicable cure period. Though we have not violated the Bid Price Requirement, the bid price of our common stock did close below \$1.00 per share at various times during 2016, and has closed below \$1.00 per share on several occasions during 2017. If we are unable to maintain compliance with the Bid Price Requirement, we may attempt to execute a reverse stock split or take other remedial actions in order to regain compliance with Bid Price Requirement and avoid delisting. If our common stock is delisted from the NASDAQ Global Select Market, we could be required to list on the OTC (over-the-counter) market, which may adversely affect the price and trading liquidity of our common stock. Delisting from the NASDAQ Global Select Market may have other negative results, including the potential loss of confidence in us by suppliers, customers and employees, the loss of institutional investor interest, fewer business development opportunities and greater difficulty in obtaining financing on favorable terms or at all.

The concentration of our capital stock ownership by our executive officers, directors and 5% stockholders will limit your ability to influence corporate matters.

Our executive officers, directors, current five percent or greater stockholders and entities affiliated with them together beneficially owned more than 50% of our common stock outstanding as of December 31, 2016. Based on

public filings and our internal records, entities affiliated with Raging Capital Management, LLC (“Raging Capital”) beneficially owned approximately 29.3% of our common stock outstanding as of December 31, 2016, and Lloyd I. Miller and entities affiliated with each of Redpoint Ventures, Presidio Partners and U.S. Venture Partners also each beneficially owned more than 5% of our common stock outstanding as of such date. This significant concentration of share ownership may adversely affect the trading price for our common stock because investors often perceive disadvantages in owning stock in companies with concentrated stock ownership. Also, these stockholders, acting together, will be able to influence our management and affairs and determine the outcome of matters requiring stockholder approval, including the election of directors and the approval of significant corporate transactions, such as mergers, consolidations or the sale of substantially all of our assets, and their interests may differ from those of our other stockholders. Consequently, this concentration of ownership may have the effect of delaying or preventing a change of control, including a merger, consolidation or other business combination involving us, or discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control, even if that change of control would benefit our other stockholders. In addition, we have entered into a governance agreement with Raging Capital pursuant to which Raging Capital has agreed, among other things, to vote all shares of our common stock beneficially owned by it and entitled to vote at our 2017 annual meeting of stockholders in favor of the director nominees recommended by our board of directors. Raging Capital also has the right to designate one such director nominee, subject to the approval of the Nominating and Corporate Governance Committee of our board of directors.

A significant portion of our total outstanding shares may be sold into the public market at any given time, which could cause the market price of our common stock to drop significantly.

If our existing stockholders sell, or if the market believes our existing stockholders will sell, substantial amounts of our common stock in the public market, the market price of our common stock could decline significantly. As of December 31, 2016, we had 49.5 million shares of common stock outstanding. All of these shares can be resold at any time, subject in some cases to the volume limitations and other restrictions of Rule 144 promulgated under the Securities Act of 1933, as amended (the “Securities Act”) and upon the lapse of our right of repurchase with respect to any unvested shares. Certain of our officers and directors may sell shares from time to time pursuant to 10b5-1 automated sales plans, and investors may react negatively to any insiders disposing of shares of our stock.

In addition, as of December 31, 2016, the holders of approximately 10.5 million shares of our common stock are entitled to certain rights with respect to the registration of such shares under the Securities Act. If we register such shares of common stock, these stockholders could sell those shares in the public market without being subject to the volume and other restrictions of Rule 144.

We also registered approximately 15.5 million shares of our common stock reserved for issuance under our equity plans. These shares can be freely sold in the public market upon issuance, subject to vesting restrictions described above.

If securities or industry analysts do not publish or cease publishing research or reports about us, our business or our market, or if they change their recommendations regarding our stock adversely, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts may publish about us, our business, our market or our competitors. If any of the analysts who cover us change their recommendations regarding our stock adversely, or provide more favorable relative recommendations about our competitors, our stock price would likely decline. If any analyst who covers us were to cease coverage of our company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Anti-takeover provisions contained in our certificate of incorporation and bylaws, as well as provisions of Delaware law, could impair a takeover attempt.

Our amended and restated certificate of incorporation and our amended and restated bylaws contain provisions that could delay or prevent a change in control of our company. These provisions could also make it more difficult for stockholders to elect directors and take other corporate actions. These provisions include:

- staggered board of directors;
- authorizing the board to issue, without stockholder approval, preferred stock with rights senior to those of our common stock;
- authorizing the board to amend our bylaws and to fill board vacancies until the next annual meeting of the stockholders;
- prohibiting stockholder action by written consent;
- limiting the liability of, and providing indemnification to, our directors and officers;
- eliminating the ability of our stockholders to call special meetings; and
- requiring advance notification of stockholder nominations and proposals.

Section 203 of the Delaware General Corporation Law prohibits, subject to some exceptions, “business combinations” between a Delaware corporation and an “interested stockholder,” which is generally defined as a stockholder who becomes a beneficial owner of 15% or more of a Delaware corporation's voting stock, for a three-year period following the date that the stockholder became an interested stockholder.

These and other provisions in our amended and restated certificate of incorporation and our amended and restated bylaws could discourage potential takeover attempts, reduce the price that investors might be willing to pay in the future for shares of our common stock, and result in the market price of our common stock being lower than it would be without these provisions.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Facilities

Our facilities currently consist of an aggregate of approximately 146,000 square feet of office, research and development clean room space in San Jose, California, pursuant to a lease that expires in 2025. As of December 31, 2016, we were using approximately 69% of the capacity of our clean room space in San Jose. We have historically expanded and invested in our facilities to support the growth of our programs and we expect to be able to continue to do so on commercially reasonable terms as we engage in new programs in the future. We have no reason to believe that additional space that we may need in the future will not be available on commercially reasonable terms.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we may become involved in legal proceedings and claims arising in the ordinary course of our business, including but not limited to legal proceedings and claims brought by employees or former employees relating to working conditions or other issues. We are not currently a party to any legal proceedings the outcome of which, if determined adversely to us, we believe would individually or in the aggregate have a material adverse effect on our business, operating results, financial condition or cash flows.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Market Information for Common Stock

Our common stock has been listed on The NASDAQ Global Select Market, or NASDAQ, under the symbol "IMI" since our initial public offering on November 18, 2011. The following table sets forth on a per share basis, for the periods indicated, the low and high sale prices of our common stock as reported by NASDAQ.

	Low	High
For the Fiscal Year Ended December 31, 2016		
First Quarter	\$ 1.83	\$ 2.83
Second Quarter	\$ 1.44	\$ 2.52
Third Quarter	\$ 0.96	\$ 1.55
Fourth Quarter	\$ 0.81	\$ 1.15
For the Fiscal Year Ended December 31, 2015		
First Quarter	\$ 1.55	\$ 1.99
Second Quarter	\$ 1.62	\$ 2.25
Third Quarter	\$ 1.72	\$ 2.44
Fourth Quarter	\$ 1.79	\$ 2.35

As of February 15, 2017, there were approximately 35 holders of record of our common stock. In addition, a substantially greater number of stockholders may be "street name" or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

Dividend Policy

We have never declared or paid any cash dividends on our common stock. We currently intend to retain any future earnings for use in the operation and expansion of our business, and do not plan to declare or pay any dividends on shares of our common stock in the foreseeable future. Subject to the foregoing, the payment of cash dividends in the future, if any, will be at the discretion of our board of directors and will depend upon a number of factors, including our earnings, capital requirements, requirements under the Delaware General Corporation Law, restrictions and covenants pursuant to any credit facilities we may enter into, our overall financial condition and any other factors deemed relevant by our board of directors.

Performance Graph

The following graph compares the cumulative 5-year total stockholder return on our common stock (IMI) relative to the cumulative total return of the NASDAQ Composite Index (^IXIC) and Philadelphia Stock Exchange Semiconductor Index (SOX). The graph assumes that the value of the investment in our common stock on December 31, 2011 and in each of the foregoing indices on December 31, 2011 (including reinvestment of dividends, if any) was \$100 and tracks it each year thereafter on the last trading day of each year through December 31, 2016. The comparisons are required by the SEC and are not intended to forecast or be indicative of possible future performance of our common stock. This graph shall not be deemed "soliciting material" or to be "filed" for purposes of Section 18 of the Exchange Act or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any of our filings under the Securities Act or the Exchange Act.



Recent Sales of Unregistered Securities

None.

Recent Purchases of Equity Securities by the Issuer and Affiliated Purchasers

None.

ITEM 6. SELECTED FINANCIAL DATA

The following selected consolidated financial data should be read together with our consolidated financial statement and accompanying notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations" appearing elsewhere in this Form 10-K. The selected consolidated financial data in this section is not intended to replace our consolidated financial statements and the accompanying notes. Our historical results are not necessarily indicative of our future results.

We derived the consolidated statements of operations data for 2016, 2015, and 2014 and the consolidated balance sheets data as of December 31, 2016 and 2015 from our audited consolidated financial statements appearing elsewhere in this filing. The consolidated statements of operations data for 2013 and 2012 and the consolidated balance sheets data as of December 31, 2014, 2013 and 2012 have been derived from our audited consolidated financial statements not included in this filing. Certain amounts in the prior year's presentations have been reclassified to conform to the current presentation. These reclassifications had no effect on previously reported net income. The data should be read in conjunction with the consolidated financial statements, related notes, and other financial information included herein.

	Years Ended December 31,				
	2016	2015	2014	2013	2012
	(in thousands, except share and per share amounts)				
Consolidated Statement of Operations Data:					
Revenue:					
Program revenue	\$ 39,690	\$ 33,930	\$ 30,624	\$ 52,470	\$ 50,963
Licensing and royalty revenue	7,608	11,392	17,071	14,936	15,864
Total revenue	47,298	45,322	47,695	67,406	66,827
Cost of revenue	15,830	19,304	24,651	32,485	28,403
Gross profit	31,468	26,018	23,044	34,921	38,424
Operating expenses:					
Research and development	28,126	28,576	24,320	24,502	21,839
Sales and marketing	7,383	5,881	5,770	6,475	5,433
General and administrative	10,713	12,287	12,636	11,973	10,868
Restructuring	1,114	—	1,361	—	—
Total operating expenses	47,336	46,744	44,087	42,950	38,140
(Loss) income from operations	(15,868)	(20,726)	(21,043)	(8,029)	284
Other income (expense):					
Interest income (expense), net	173	(267)	(682)	(830)	(1,004)
Other income (expense), net	265	(12)	(29)	57	15
Total other income (expense), net	438	(279)	(711)	(773)	(989)
Loss before provision for income taxes	(15,430)	(21,005)	(21,754)	(8,802)	(705)
Provision for income taxes	7	8	7	17	51
Net loss	(15,437)	(21,013)	(21,761)	(8,819)	(756)
Net loss attributable to common stockholders	\$ (15,437)	\$ (21,013)	\$ (21,761)	\$ (8,819)	\$ (756)
Net loss per share of common stock, basic and diluted	\$ (0.31)	\$ (0.44)	\$ (0.47)	\$ (0.20)	\$ (0.02)
Weighted-average number of shares used in computing net loss per share of common stock, basic and diluted	49,395,635	48,158,378	46,718,495	44,958,120	42,966,448
Other Data:					
Adjusted EBITDA (unaudited)	\$ (1,325)	\$ (4,871)	\$ (2,782)	\$ 6,907	\$ 12,895
Adjusted earnings (unaudited)	\$ (10,696)	\$ (15,340)	\$ (14,379)	\$ (3,336)	\$ 2,896

	Years Ended December 31,				
	2016	2015	2014	2013	2012
	(in thousands)				
Consolidated Balance Sheet Data:					
Cash, cash equivalents and investments	\$ 27,789	\$ 35,332	\$ 65,069	\$ 72,083	\$ 78,283
Working capital	27,298	32,810	62,077	67,396	52,207
Total assets	53,168	69,677	105,437	124,482	123,685
Long-term debt, including current portion	—	—	23,000	25,000	26,514
Total stockholders' equity	\$ 44,996	\$ 56,099	\$ 70,265	\$ 84,852	\$ 85,517

Non-GAAP Financial Measure

We believe that the use of adjusted EBITDA and adjusted earnings, both non-GAAP financial measures, are helpful for an investor in determining whether to invest in our common stock. We include both adjusted EBITDA and adjusted earnings in this Annual Report on Form 10-K because (i) we seek to manage our business to consistent levels of adjusted EBITDA and adjusted earnings, (ii) these measures are a key basis upon which our management assesses our operating performance, (iii) they are primary metrics investors use in evaluating companies' performance in our industry and (iv) they are factors in the evaluation of the performance of our management in determining compensation. We define adjusted EBITDA as net income (loss) less interest, provision for income taxes, depreciation and amortization expense, non-cash impairment charges, restructuring related charges and stock-based compensation expense. We define adjusted earnings as net income (loss) less restructuring related charges and stock-based compensation expense.

We use adjusted EBITDA and adjusted earnings as key performance measures because we believe they facilitate operating performance comparisons from period to period by excluding potential differences caused by variations in capital structures, tax positions (such as the impact of changes in effective tax rates or fluctuations in permanent differences or discrete quarterly items), the impact of depreciation and amortization expense, the impact of non-cash impairment charges, restructuring related charges and the impact of stock-based compensation expense.

We believe adjusted EBITDA and similar measures are widely used by investors, securities analysts, ratings agencies and other interested parties in our industry as a measure of financial performance and debt-service capabilities. Our use of adjusted EBITDA has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for analysis of our results as reported under GAAP. Some of these limitations are:

- Adjusted EBITDA does not reflect our cash expenditures for capital equipment, restructuring related charges or other contractual commitments;
- Although depreciation and amortization are non-cash charges, the assets being depreciated and amortized may have to be replaced in the future, and adjusted EBITDA does not reflect cash capital expenditure requirements for such replacements;
- Adjusted EBITDA does not reflect changes in, or cash requirements for, our working capital needs;
- Adjusted EBITDA does not reflect the interest expense or the cash requirements necessary to service interest or principal payments on our indebtedness;
- Adjusted EBITDA does not reflect certain tax payments that may represent a reduction in cash available to us; and
- Other companies, including companies in our industry, may calculate adjusted EBITDA measures differently, which reduces their usefulness as a comparative measure.

We also believe adjusted earnings and similar measures are also widely used by investors, securities analysts, ratings agencies and other interested parties in our industry as a measure of financial performance and debt-service capabilities. Our use of adjusted earnings has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for analysis of our results as reported under GAAP. Some of these limitations are:

- Adjusted earnings do not reflect our cash expenditures for capital equipment, restructuring related charges or other contractual commitments;
- Adjusted earnings do not reflect changes in, or cash requirements for, our working capital needs; and
- Other companies, including companies in our industry, may calculate adjusted earnings measures differently, which reduces their usefulness as a comparative measure.

Because of these limitations, adjusted EBITDA and adjusted earnings should not be considered as a measure of discretionary cash available to us to invest in the growth of our business. When evaluating our performance, you should consider adjusted EBITDA and our adjusted earnings alongside other financial performance measures, including our net loss and other GAAP results.

The following tables present a reconciliation of adjusted EBITDA and our adjusted earnings to our net loss, the most comparable GAAP measure, for each of the periods indicated:

Adjusted EBITDA:	Years Ended December 31,				
	2016	2015	2014	2013	2012
	(in thousands)				
Net loss	\$ (15,437)	\$ (21,013)	\$ (21,761)	\$ (8,819)	\$ (756)
Non-GAAP adjustments:					
Interest, net	(173)	(267)	682	830	1,004
Provision for taxes	7	8	7	17	51
Depreciation, amortization (impairments) and accretion	9,537	10,728	10,908	9,396	8,944
Restructuring charges	1,114	—	1,361	—	—
Stock-based compensation expense(1)	3,627	5,673	6,021	5,483	3,652
Adjusted EBITDA	<u>\$ (1,325)</u>	<u>\$ (4,871)</u>	<u>\$ (2,782)</u>	<u>\$ 6,907</u>	<u>\$ 12,895</u>

Adjusted Earnings:	Years Ended December 31,				
	2016	2015	2014	2013	2012
	(in thousands)				
Net loss	\$ (15,437)	\$ (21,013)	\$ (21,761)	\$ (8,819)	\$ (756)
Non-GAAP adjustments:					
Restructuring charges	1,114	—	1,361	—	—
Stock-based compensation expense(1)	3,627	5,673	6,021	5,483	3,652
Adjusted earnings	<u>\$ (10,696)</u>	<u>\$ (15,340)</u>	<u>\$ (14,379)</u>	<u>\$ (3,336)</u>	<u>\$ 2,896</u>

(1) Includes stock-based compensation as follows:

	Years Ended December 31,				
	2016	2015	2014	2013	2012
	(in thousands)				
Cost of revenues	\$ 510	\$ 1,114	\$ 1,315	\$ 1,453	\$ 1,011
Research and development	949	1,668	1,234	1,301	872
Sales and marketing	527	651	1,470	1,175	774
General and administrative	1,641	2,240	2,002	1,554	995
Total stock-based compensation	<u>\$ 3,627</u>	<u>\$ 5,673</u>	<u>\$ 6,021</u>	<u>\$ 5,483</u>	<u>\$ 3,652</u>

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

Our Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) is provided in addition to the accompanying consolidated financial statements and notes to assist readers in understanding our results of operations, financial condition, and cash flows. Our MD&A is organized as follows:

- *Overview.* Discussion of our business and overall analysis of financial and other highlights affecting the Company in order to provide context for the remainder of this MD&A.
- *Strategy.* Our overall strategy.
- *Basis of Presentation.* A summary of the primary elements of our financial results.
- *Critical Accounting Estimates.* Accounting estimates that we believe are most important to understanding the assumptions and judgments incorporated in our reported financial results and forecasts.
- *Results of Operations.* An analysis of our financial results comparing the year ended December 31, 2016 to the year ended December 31, 2015 and the year ended December 31, 2015 to the year ended December 31, 2014.
- *Liquidity and Capital Resources.* An analysis of changes in our balance sheets and cash flows, and discussion of our financial condition and potential sources of liquidity.

The following discussion and analysis should be read in conjunction with our audited consolidated financial statements and the related notes that appear elsewhere in this Annual Report on Form 10-K. This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. These statements are often identified by the use of words such as "may," "will," "expect," "believe," "anticipate," "intend," "could," "should," "estimate," or "continue," and similar expressions or variations. Such forward-looking statements are subject to risks, uncertainties and other factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section titled "Risk Factors," set forth in Part I, Item 1A of this Annual Report on Form 10-K and elsewhere in this report. The forward-looking statements in this Annual Report on Form 10-K represent our views as of the date of this Annual Report on Form 10-K. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Annual Report on Form 10-K.

Overview

We are a partner for the innovation of advanced materials using high throughput experimentation. Advanced materials are critical to sustaining and advancing many industries, including the semiconductor, consumer electronics, aerospace and automotive industries. Using traditional experimental techniques, it can take many years to discover new advanced materials and many more years to deploy them in the marketplace. By leveraging our proprietary HPC platform and multi-disciplinary development team, we strive to enable our customers to more rapidly discover advanced materials and tailor them to suit their needs.

We were founded in 2004 and are headquartered in San Jose, California. Our total revenue increased to \$47.3 million for the year ended December 31, 2016 from \$45.3 million for the year ended December 31, 2015.

Our net loss decreased to \$15.4 million for the year ended December 31, 2016 from a net loss of \$21.0 million for the year ended December 31, 2015. Since inception, we have incurred net losses leading to an accumulated deficit of \$168.3 million as of December 31, 2016.

Strategy

We currently target large markets that rely on advanced materials for differentiation. Within these broad markets, we target customers that have track records of technological innovation, have significant materials-based research and development (R&D), and are pursuing technical advancements that are critical to their success and strategy. Generally, our approach is most relevant to industries that rely heavily upon advanced thin film materials such as those achieved using physical vapor deposition (PVD) and atomic layer deposition (ALD) processing tools; however, our approach is also relevant to discovering and understanding advanced materials more broadly, including advanced bulk materials such as metal alloys. Historically, we have partnered most extensively in the semiconductor industry and particularly in the area of semiconductor memory such as dynamic RAM (DRAM) and new non-volatile memory (NVM) technologies. Going forward, we currently plan to continue growing our footprint within semiconductors, while expanding our engagements in areas such as architectural glass, industrial coating and alloys.

Basis of Presentation

How We Generate Revenue

Our customer engagement process primarily generates revenue in two ways: program revenue; and licensing and royalty revenue. Programs are our primary engagement model with customers and are structured to result in program fees, and in some cases licensing and/or royalty revenue arrangements.

	Years Ended December 31,		
	2016	2015	2014
	(in thousands)		
Revenue:			
Program revenue	\$ 39,690	\$ 33,930	\$ 30,624
Licensing and royalty revenue	7,608	11,392	17,071
Total revenue	<u>\$ 47,298</u>	<u>\$ 45,322</u>	<u>\$ 47,695</u>

- *Program revenue.* Program revenue may include payments for research services, milestone payments, and subscription payments for dedicated and shared workflow tools used in the programs and reimbursed payments for consumables and outside services from third parties. Individual programs typically range from six months up to three years. We recognize program revenue in a manner consistent with activities performed. As we engage new customers and negotiate extensions for existing customer agreements that are nearing completion, we expect program revenue to continue to fluctuate.
- *Licensing and royalty revenue.* Licensing and royalty revenue consists of licensing fees and royalties for granting our customers rights to our proprietary technology and intellectual property (IP). Specifically, this includes licensing the HPC capabilities of our workflows, licensing our informatics and analysis software, and licensing fees and royalties on products commercialized by our customers that incorporate technology developed through our programs. In certain instances, minimum license fees and royalties may be guaranteed by customer contracts and are recognized as revenue ratably over the related periods. We anticipate our licensing and royalty revenue to continue to fluctuate based on the timing and amount of minimum license fees guaranteed by certain customer contracts and the timing of customer reported volume-based royalties.

Key Financial Metrics

We monitor the key financial metrics set forth below to help us evaluate growth trends, establish budgets, measure the effectiveness of our sales and marketing efforts, manage our human resources and assess operational efficiencies.

Revenue growth and mix. We monitor revenue from programs for existing and new customers. To increase our ability to serve and accelerate innovation more broadly across certain market segments, we expect to engage in an increasing number of pre-competitive programs that allow us to accumulate, reuse and more broadly license information and innovation that we discover and develop.

Adjusted EBITDA. We monitor our adjusted EBITDA to measure the profitability of our business. We use adjusted EBITDA as a key performance measure because we believe it facilitates operating performance comparisons from period to period by excluding potential differences caused by variations in capital structures, tax positions (such as the impact of changes in effective tax rates or fluctuations in permanent differences or discrete quarterly items), interest expense or the cash requirements necessary to service interest or principal payments on our indebtedness, the impact of depreciation and amortization expense, restructuring related charges, and the impact of stock-based compensation expense. See "Selected Consolidated Financial Data—Non-GAAP Financial Measure" for a reconciliation of adjusted EBITDA to our net loss, the most comparable GAAP measure.

Adjusted earnings. We monitor our adjusted earnings to measure the profitability of our business. We use adjusted earnings as a performance measure because we believe it facilitates operating performance comparisons from period to period by excluding potential differences caused by variations in capital structures, restructuring related charges, and the impact of stock-based compensation expense. See "Selected Consolidated Financial Data—Non-GAAP Financial Measure" for a reconciliation of our adjusted earnings to our net loss, the most comparable GAAP measure.

Factors Affecting our Performance

Reliance on continued customer engagement. In our previous CDP's, our success was tied to our customers' ability to successfully commercialize the products that incorporate technology developed through programs. Today our preferred approach is to engage with customers using a multi-year umbrella agreement that allows our customer during the term to selectively engage in multiple projects, each typically having a duration of six to twelve months and each subject to its own payment obligations, which can include success fees or royalties depending on how the project leverages our development team or incorporates our background technology. Generally, if a project requires us to both direct the project and meet a target specification, as is typically the case for CDPs, we seek success fees and/or royalties in addition to insisting on being profitably compensated during the term of the project. Similarly, we seek an additional fee if a customer decides to commercialize our background technology. While our new, flexible engagement model has substantially reduced our sales cycle it has made us more reliant on continued customer programs and customer satisfaction with our deliverables.

Exposure to semiconductor memory end markets. Our performance is linked to the end markets in which our customers operate. Certain of these markets, such as the semiconductor memory markets have historically shown significant price volatility as a result of imbalances in supply and demand. As such, these markets have been traditionally challenging for participants. We attempt to manage this end market risk by participating in multiple end markets and by selecting customers that we believe will be successful in those markets.

Revenue mix. Our revenue from programs vary from contract to contract depending on the customer's requirements and the scope of the service. The gross profit from programs may vary based on the size and scope of the contract. We target an average gross margin contribution that is consistent across the industries and end markets we serve.

Extended sales cycles. Our sales cycles can be extended, and we may commit significant resources and expenses for a project before a potential customer commits to a program. Under the CDP model, our sales cycles to date were typically ranged from 9 to 24 months, and under our new business model they have ranged between 3 and 9 months with existing customers and 6 to 12 months when engaging with a customer that is new to us. Investment of time and resources in a particular customer engagement that does not ultimately result in material revenue will adversely affect our revenue and results of operations.

Customer concentration. Due to the concentrated nature of manufacturers in the DRAM and complex logic markets, our revenue is and may continue to be concentrated to key high-volume customers. However, we believe there is an opportunity to expand our engagements with our customers into new applications over time. In addition,

because our platform is broadly applicable to industries whose products rely on thin films for differentiation, including semiconductors, flat glass coatings and glass-based devices, special metal alloys, LEDs, flat-panel displays and other technologies, we believe we have significant opportunities to engage with a broad range of customers.

Cost of Revenue and Operating Expenses

Cost of Revenue

The following table sets forth our cost of revenue by revenue category:

	Years Ended December 31,		
	2016	2015	2014
	(in thousands)		
Cost of revenues:			
Cost of program revenue	\$ 15,705	\$ 18,965	\$ 24,358
Cost of licensing and royalty revenue	125	339	293
Total cost of revenues	<u>\$ 15,830</u>	<u>\$ 19,304</u>	<u>\$ 24,651</u>

Our cost of revenue is variable and depends on the product mix and type of revenue earned in each period relating to our customer programs.

- *Cost of program revenue.* Our cost of program revenue primarily consists of salaries and other personnel-related expenses, including stock-based compensation, for our research and development scientists, engineers and development fab process operations employees. Additionally, our cost of revenue includes costs of wafers, targets, materials, program-related supplies, third-party professional fees and depreciation of equipment used in programs. We include inventory obsolescence and customer related asset impairments in cost of program revenue.
- *Cost of licensing and royalty revenue.* Our cost of licensing and royalty revenue has, and we expect will continue to, primarily consist of the amortization of acquired patents, which were acquired as part of our Symyx asset purchase in November 2011, and licensing obligations.

Research and Development

Our R&D expenses consist of costs incurred for development and continuous improvement of our HPC platform, expansion of software capabilities and application research and development that are not associated with customer programs. R&D costs include personnel-related expenses, including stock-based compensation expenses, for our technical staff as well as consultant costs, parts and prototypes, wafers, chemicals, supply costs, facilities costs, utilities costs related to laboratories and offices occupied by technical staff, depreciation on equipment used by technical staff, long-lived R&D assets impairment, and outside services, such as machining and third-party R&D costs. We recognize R&D overhead costs that are not allocated to a customer program as expenses within R&D.

Sales and Marketing

Our sales and marketing expenses consist primarily of personnel-related costs, including stock-based compensation, for our sales and marketing employees, as well as payments of commissions to our sales employees, facility costs and professional expenses. Professional expenses consist of external website and marketing communication consulting costs and market research.

General and Administrative

General and administrative expenses consist primarily of personnel-related costs, including stock-based compensation, as well as professional services and facilities costs related to our executive, finance, legal, human resources, management information systems and information technology functions. Professional services consist of outside accounting, information technology, consulting and legal costs. We also incur significant accounting and

legal costs related to compliance with rules and regulations enacted by the Securities and Exchange Commission, including the costs of maintaining compliance with Section 404 of the Sarbanes-Oxley Act, as well as insurance, investor relations and other costs associated with being a public company.

Restructuring Expense

Restructuring expenses consist of personnel-related costs associated with workforce reductions we completed during 2016 and 2014. In September 2016, we initiated a reduction in force to improve our cost structure and align spending with continuing operations plans. The reduction in force constituted approximately 13% of our global workforce and was substantially completed during the third quarter of 2016. In 2014, after experiencing a reduced level of program activity, we initiated reductions in force in February 2014 and May 2014 with respect to approximately 18% and 10% of our workforce at such times, respectively. These reductions in force were part of an overall plan to reduce our cost structure and were completed during 2014.

Interest Income (Expense), net

Interest expense consists primarily of interest on a capital lease initiated in July 2016 as well as interest accrued on our credit facility with Silicon Valley Bank (SVB), which was converted in November 2013 to a three year note and repaid in full in August 2015. Consequently there was no interest expense related to the SVB credit facility in 2016. Interest income represents interest earned on our cash, cash equivalents and investments. We expect interest income will vary each reporting period depending on our average investment balances during the period and market interest rates.

Other Income (Expense), net

Other income primarily consist of sublease income that we receive from subleasing a portion of our office space under a sublease agreement entered into in December 2015. The term of the lease is for three years and annual gross rent is approximately \$0.3 million. The sublessee moved in and occupied the space during the second quarter of 2016. Other income (expense) also includes foreign exchange gains and losses that have not been significant.

Provision for Income Taxes

We are subject to taxes in the United States as well as other tax jurisdictions or countries in which we conduct business. Earnings from our non-U.S. activities are subject to local country income tax and may be subject to current U.S. income tax. To date, we have incurred net losses and have not recorded any U.S. federal income tax benefits as these losses have been offset by valuation allowances. As of December 31, 2016, we had net operating loss carryforwards for federal and state income tax purposes of approximately \$105.5 million and \$96.5 million, respectively. Of these amounts, \$14.6 million and \$13.6 million, respectively, represent federal and state tax deductions from stock-based compensation which will be recorded as an adjustment to additional paid-in capital when they reduce taxes payable.

In addition, we had \$10.1 million in U.S. federal R&D credit and \$11.2 million in California R&D credit carryforwards to offset future income tax liabilities. Our ability to use our net operating loss carryforwards to offset future taxable income and our ability to use our tax credit carryforwards to offset future income tax liabilities may be subject to certain limitations arising from "ownership changes" within the meaning of Section 382 of the Internal Revenue Code.

Critical Accounting Policies and Estimates

Our consolidated financial statements have been prepared in conformity with generally accepted accounting principles in the United States and include our accounts and the accounts of our wholly-owned subsidiaries. The preparation of our consolidated financial statements requires our management to make estimates, assumptions and judgments that affect the reported amounts of assets and liabilities and disclosures for contingent assets and liabilities as of the date of the financial statements, and the reported amounts of revenue and expenses during the

applicable periods. Management bases its estimates, assumptions and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances. Different assumptions and judgments would change the estimates used in the preparation of our consolidated financial statements which, in turn, could change the results from those reported. Our management evaluates its estimates, assumptions and judgments on an ongoing basis.

There have been no material changes in the matters for which we make critical accounting estimates in the preparation of our consolidated financial statements as described below.

Revenue Recognition

We generate revenue primarily in two ways: research and development programs; and other services, which consist of technology licensing and royalty fees. Product sales have been made historically, but are not a principal source of revenue. Revenue is recognized when all of the following criteria are met:

- Persuasive evidence of an arrangement exists;
- Delivery has occurred or services have been rendered;
- The fee is fixed or determinable; and
- Collectability of the fee is probable.

Persuasive evidence of the arrangement represents a written contract signed by both the Company and the customer, or a customer purchase order. We assess whether a price is fixed or determinable by, among other things, reviewing contractual terms and conditions related to payment terms. We also assesses collectability based on factors such as the customer's creditworthiness and past collection history, if applicable. If collection is not probable, revenue recognition is deferred until receipt of payment.

We evaluate each element in a multiple-element arrangement to determine whether it represents a separate unit of accounting. An element constitutes a separate unit of accounting when it has standalone value and delivery of an undelivered element is both probable and within our control. When these criteria are not met, the delivered and undelivered elements are combined and the arrangement fees are allocated to this combined single unit. If the unit separation criteria are met, we account for each element within a multiple-element arrangement separately, whereby the total arrangement fees are allocated to each element based on its relative selling price, which we establish using a selling price hierarchy. We determine the selling price of each element based on its vendor-specific objective evidence (VSOE), if available, third party evidence (TPE), if VSOE is not available, or estimate of selling price (ESP) if neither VSOE nor TPE is available. We do not recognize revenue that is contingent upon the future delivery of products or services or upon future performance obligations. We have not established VSOE for the determination of estimated selling price of elements, and since third-party evidence is not available for those elements where vendor-specific objective evidence of selling price cannot be determined, we evaluate factors to determine estimated selling prices (ESP) for all other elements.

Program services revenue - We enter into programs with customers under which we conduct R&D activities. These agreements specify minimum levels of research effort required to be performed by us. Payments received under the agreements are not refundable if the research effort is not successful. Historically, we have not provided any refunds under these arrangements.

We retain rights to certain elements of technology developed during the course of performance, which the customer has an option to license in the future under the terms defined in the agreement. We typically recognize revenue from these arrangements as completed when all other revenue recognition criteria have been met. We generate a significant portion of our program revenue from certain research and development service contracts delivered over a specific period of time. These contracts require reliable estimation of costs to perform obligations and the overall scope of each engagement. Revenue under project-based contracts for those programs is recognized as services are performed using percentage of completion method of contract accounting based on output or input (i.e., costs or labor-hours) method, whichever is the most appropriate measure of the progress towards completion of the contract. Losses on the contracts are recognized in the period when they become probable. Revisions in profit

estimates are reflected in the period in which the conditions that require the revisions become known and can be estimated. Some of our arrangements with customers also have fixed monthly fees and requirements to provide regular reporting of R&D activities performed. Payments received prior to performance are deferred and recognized as revenue when earned over future performance periods.

Licensing and royalty revenue - We recognize revenue for licenses to intellectual property when earned pursuant to the terms of the agreements. Time-based license revenue is recognized ratably over the license term. Licensing and royalty revenue that becomes triggered by specific customer actions, such as exercise of a license option or by sales volume, is recognized when it occurs based on royalty reports or other information received from the licensee. Minimum and prepaid royalties and license fees are recognized ratably over the related periods. Revenue on the sale of intellectual property is recognized in full when title transfers if there are no remaining deliverables related to the intellectual property purchase.

Stock-Based Compensation

We recognize compensation costs related to stock options and shares of restricted stock granted to employees based on the estimated fair value of the awards on the date of grant, net of estimated forfeitures. We estimate the grant date fair value for stock options, and the resulting stock-based compensation expense, using the Black-Scholes option-pricing model. The grant date fair value of the stock-based awards is generally recognized on a straight-line basis over the requisite service period, which is generally the vesting period of the respective awards.

The fair value of the awards granted are calculated using the Black-Scholes option valuation model, which requires the use of assumptions which determine the fair value of share-based awards, including the expected term and the price volatility of the underlying stock. These assumptions include:

Expected Term - The expected term represents the period that the stock-based awards are expected to be outstanding. For option grants that are considered to be "plain vanilla," we used the simplified method to determine the expected term as provided by the SEC. The simplified method calculates the expected term as the average of the time-to-vesting and the contractual life of the options.

Expected Volatility - The expected volatility is derived primarily from historical volatilities of several unrelated, publicly listed peer companies over a period approximately equal to the expected term of the award and to a lesser extent, our weighted historical volatility following our IPO in November 2011. When making the selections of our industry peer companies to be used in the volatility calculation, we considered the size, operational and economic similarities to our principal business operations.

Expected Dividend Rate - The expected dividend rate was assumed to be zero as we have never paid dividends and have no current plans to do so.

Risk-Free Interest Rate - The risk-free interest rate is based on the U.S. Treasury yield in effect at the time of grant for zero coupon U.S. Treasury notes with maturities approximately equal to the expected term of the awards.

In addition to the assumptions used in the Black-Scholes option-pricing model, we must also estimate a forfeiture rate to calculate the stock-based compensation for our awards. Our forfeiture rate is based on an analysis of our actual forfeitures. We will continue to evaluate the appropriateness of the forfeiture rate based on actual forfeiture experience, analysis of employee turnover and other factors. Quarterly changes in the estimated forfeiture rate can have a significant impact on our stock-based compensation expense as the cumulative effect of adjusting the rate is recognized in the period the forfeiture estimate is changed. If a revised forfeiture rate is higher than the previously estimated forfeiture rate, an adjustment is made that will result in a decrease to the stock-based compensation expense recognized in the financial statements. If a revised forfeiture rate is lower than the previously estimated forfeiture rate, an adjustment is made that will result in an increase to the stock-based compensation expense recognized in the financial statements.

We will continue to use judgment in evaluating the expected volatility, expected terms and forfeiture rates utilized for our stock-based compensation calculations on a prospective basis. As we continue to accumulate additional data related to our common stock and stock option exercises, we may have refinements to the estimates of our expected volatility, expected terms and forfeiture rates, which could materially impact our future stock-based compensation expense.

As of December 31, 2016 we had \$3.1 million of unrecognized stock-based compensation expense, net of estimated forfeitures, that is expected to be recognized over a weighted average period of 2.7 years.

The intrinsic value of all outstanding awards as of December 31, 2016 was \$0.3 million, based on the \$0.95 per share closing sale price for our common stock on December 31, 2016.

Impairment of Long-Lived Assets

We evaluate long-lived assets, which consist of property and equipment and intangible assets, for indicators of possible impairment when events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. In addition, we review and test our long-lived assets for impairment at least annually. Impairment exists if the carrying amounts of such assets exceed the estimates of future net undiscounted cash flows expected to be generated by such assets. Should impairment exist, the impairment loss would be measured based on the excess carrying value of the asset over the estimated fair value of the asset.

Results of Operations

Comparison of the Years Ended December 31, 2016 and 2015

	<u>Years Ended December 31,</u>		<u>\$ Change</u>	<u>% Change</u>
	<u>2016</u>	<u>2015</u>		
	(in thousands)			
Revenue:				
Program revenue	\$ 39,690	\$ 33,930	\$ 5,760	17%
Licensing and royalty revenue	7,608	11,392	(3,784)	-33%
Total revenue	47,298	45,322	1,976	4%
Cost of revenue:				
	15,830	19,304	(3,474)	-18%
Gross profit	31,468	26,018	5,450	21%
Operating expenses:				
Research and development	28,126	28,576	(450)	-2%
Sales and marketing	7,383	5,881	1,502	26%
General and administrative	10,713	12,287	(1,574)	-13%
Restructuring charges	1,114	—	1,114	
Total operating expenses	47,336	46,744	592	1%
Loss from operations	(15,868)	(20,726)	4,858	
Other income (expense):				
Interest income (expense), net	173	(267)	440	
Other income (expense), net	265	(12)	277	
Total other income (expense), net	438	(279)	717	
Loss before provision for income taxes	(15,430)	(21,005)	5,575	
Provision for income taxes	7	8	(1)	
Net loss	<u>\$ (15,437)</u>	<u>\$ (21,013)</u>	<u>\$ 5,576</u>	

Revenue

Our revenue increased by \$2.0 million, or 4%, to \$47.3 million during the year ended December 31, 2016, from \$45.3 million during the year ended December 31, 2015, driven by a 17% increase in program revenue, partially offset by a 33% decline in licensing and royalty revenue. The increase in program revenue was primarily a result of a \$4.7 million increase in revenue from new customer engagements and a \$16.4 million increase in current customer growth, which was partially offset by a \$15.3 million decrease in revenue related to scheduled completion and reduction of program agreements. The decrease in licensing and royalty revenue was primarily due to lower end-market sales and the ending of one exclusivity agreement.

We expect our revenue to fluctuate from period to period based on demand for, and our resources to fulfill, our services, project completion schedules and end-market sales.

The following table presents revenue by geographic region (based on invoiced locations) during the years ended December 31, 2016 and 2015 in dollars (in thousands) and as a percentage of revenue for the periods presented:

	Years Ended December 31,			
	2016		2015	
	Revenues	% of Revenues	Revenues	% of Revenues
United States	\$ 21,728	46%	\$ 28,327	63%
Japan	313	1%	2,848	6%
APAC ex Japan	23,830	50%	13,074	29%
Europe and Middle East	1,427	3%	1,073	2%
Total	\$ 47,298	100%	\$ 45,322	100%

Cost of Revenue

Cost of revenue decreased by \$3.5 million, or 18%, to \$15.8 million during the year ended December 31, 2016 from \$19.3 million during the prior year which ended December 31, 2015, due to decreases in labor and personnel-related expenses, depreciation, materials and other costs associated with programs. Stock-based compensation, which was included in personnel-related expenses, decreased by \$0.6 million for the year ended December 31, 2016, compared to the year ended December 31, 2015.

Gross Margin

Our gross profit as a percentage of net revenues, or gross margin, has been and will continue to be affected by a variety of factors, including the mix of program revenue and licensing and royalty revenue recognized during the period. We achieve a higher gross margin on licensing and royalty revenue as compared to program revenue.

Gross margin was 66.5% during the year ended December 31, 2016 compared to 57.4% for the year ended December 31, 2015. This increase was primarily attributable to a higher revenue and decreased labor and personnel-related expenses, depreciation, materials and other costs associated with programs.

Research and Development

R&D expenses decreased by \$0.5 million, or 2%, to \$28.1 million during the year ended December 31, 2016, from \$28.6 million compared to the year ended December 31, 2015. The changes were primarily attributable to decreases in our personnel-related expenses and professional services fees, slightly more than offsetting impairment charges of \$1.9 million on long-lived assets which we recorded in 2016.

During the third quarter of 2016, we recorded an impairment charge of \$0.9 million related to certain lab equipment and another \$1.0 million related to patents, both of which had carrying values deemed not to be recoverable. The impairment losses were directly attributable to changes in certain aspects of our business model in 2016. Fair value was calculated based on expected future cash flows using Level 3 inputs under ASC 820. The cash flows are those expected to be generated by the market participants, discounted at the risk-free rate of interest.

Because of changing market conditions (such as rising interest rates and less usage or declining marketplace demand), it is reasonably possible that the estimate of expected future cash flows may change in the near term resulting in the need to adjust our determination of fair value.

Stock-based compensation, which was included in personnel-related expenses, decreased by \$0.7 million for the year ended December 31, 2016, compared to the year ended December 31, 2015.

Sales and Marketing

Sales and marketing expenses increased by \$1.5 million, or 26%, to \$7.4 million during the year ended December 31, 2016, from \$5.9 million during the year ended December 31, 2015. The increases were attributable to higher personnel costs related to increased headcount, wages and other related benefits as well as new corporate marketing initiatives.

Stock-based compensation, which was included in personnel-related expenses, decreased by \$0.1 million for the year ended December 31, 2016, compared to the year ended December 31, 2015.

General and Administrative

General and administrative expenses decreased by \$1.6 million, or 13%, to \$10.7 million during the year ended December 31, 2016, from \$12.3 million for the year ended December 31, 2015. This decrease was primarily attributable to lower personnel costs related to decreased headcount, wages, other related benefits and professional fees.

Stock-based compensation, which was included in personnel-related expenses, decreased by \$0.6 million for the year ended December 31, 2016, compared to the year ended December 31, 2015.

Restructuring Charges

Restructuring expenses were \$1.1 million during the year ended December 31, 2016. In September 2016, we initiated a restructuring plan to reduce workforce by 13%, pursuant to which charges of \$1.1 million were incurred for severance and other personnel related costs. There were no restructuring expenses during the year ended December 31, 2015.

Loss from Operations

Our operating loss decreased by \$4.9 million to \$15.8 million during the year ended December 31, 2016, compared to \$20.7 million for the year ended December 31, 2015, driven principally by a \$2.0 million increase in our revenue and a \$3.5 million improvement in gross margins, which were partially offset by a \$0.6 million increase in total operating expenses during the year ended December 31, 2016, compared to the year ended December 31, 2015.

Interest Income (Expense), net

The increases in interest income (or decreases in interest expense) of \$0.4 million during the year ended December 31, 2016, compared to the year ended December 31, 2015 were primarily related to income on our investments and interest payments on the SVB loan facility, which was repaid in full in the third quarter of 2015. During the year ended December 31, 2015, the expense primarily consisted of interest expense associated with the loan facility with SVB.

Other Income (Expense), net

Other income, net, for the year ended December 31, 2016 consisted principally of lease income that we received from subleasing a portion of our office space under an agreement entered into in December 2015. The sublessee moved in and occupied the space during the second quarter of 2016. Other income (expense) during the year ended December 31, 2015 consisted of foreign exchange gains and losses and was not significant.

Provision for Income Taxes

Provision for income taxes during the years ended December 31, 2016 and 2015 consisted principally of income taxes on our foreign entities and were not significant during either period.

Net Loss

Our net loss decreased by \$5.6 million to a net loss of \$15.4 million during the year ended December 31, 2016, compared to \$21.0 million for the year ended December 31, 2015. The differences between operating loss and net loss during the year ended December 31, 2016 and 2015 were primarily attributable to our sublease income in fiscal 2016 and interest expense associated with the loan facility with SVB in fiscal 2015.

Comparison of the Years Ended December 31, 2015 and 2014

	Years Ended December 31,		\$ Change	% Change
	2015	2014		
	(in thousands)			
Revenue:				
Program revenue	\$ 33,930	\$ 30,624	\$ 3,306	11%
Licensing and royalty revenue	11,392	17,071	(5,679)	-33%
Total revenue	45,322	47,695	(2,373)	-5%
Cost of revenue:	19,304	24,651	(5,347)	-22%
Gross profit	26,018	23,044	2,974	13%
Operating expenses:				
Research and development	28,576	24,320	4,256	18%
Sales and marketing	5,881	5,770	111	2%
General and administrative	12,287	12,636	(349)	-3%
Restructuring charges	—	1,361	(1,361)	-100%
Total operating expenses	46,744	44,087	2,657	6%
(Loss) income from operations	(20,726)	(21,043)	317	
Other income (expense):				
Interest expense, net	(267)	(682)	415	
Other income (expense), net	(12)	(29)	17	
Total other income (expense), net	(279)	(711)	432	
Loss before provision for income taxes	(21,005)	(21,754)	749	
Provision for income taxes	8	7	1	
Net loss	\$ (21,013)	\$ (21,761)	\$ 748	

Revenue

Our revenue decreased by \$2.4 million, or 5%, to \$45.3 million during the year ended December 31, 2015 from \$47.7 million during the year ended December 31, 2014 due to decreases in licensing and royalty revenue that was partially offset by an increase in program revenue.

Program revenue increased by \$3.3 million, or 11%, to \$33.9 million during the year ended December 31, 2015 from \$30.5 million during the year ended December 31, 2014. This increase was primarily attributable to new

customer program agreements of \$4.1 million and the growth of current programs of \$8.4 million. This was offset by \$9.2 million in the scheduled completion and reduction of customer program services.

Licensing and royalty revenue decreased by \$5.7 million, or 33%, to \$11.4 million during the year ended December 31, 2015 from \$17.1 million during the year ended December 31, 2014. This decrease was primarily attributable to an accelerated payment in the amount of \$4.2 million from a customer in connection with the suspension of program activities with them in the year ended December 31, 2014, as well as a reduction from the scheduled completion of customer licensing and royalty activities.

The following table presents revenue by geographic region (based on invoiced locations) during the years ended December 31, 2015 and 2014 in dollars (in thousands) and as a percentage of revenue for the periods presented:

	Years Ended December 31,			
	2015		2014	
	Revenues	% of Revenues	Revenues	% of Revenues
United States	\$ 28,654	63%	\$ 42,350	88%
Japan	2,521	6%	2,726	6%
APAC ex Japan	13,074	29%	1,781	4%
Europe and Middle East	1,073	2%	838	2%
Total	\$ 45,322	100%	\$ 47,695	100%

Cost of Revenue

Cost of revenue decreased by \$5.3 million, or 22%, to \$19.3 million during the year ended December 31, 2015 from \$24.7 million during the year ended December 31, 2014. This decrease was a result of a \$2.5 million decrease in direct labor, materials and other costs associated with the scheduled completion and reduction of certain service agreements, and a \$1.7 million decrease in depreciation for fully depreciated equipment. The decrease in cost of revenue also resulted from a lower reserve in the year ended December 31, 2015 of \$0.9 million for obsolete inventory.

Gross Margin

Our gross profit as a percentage of net revenues, or gross margin, has been and will continue to be affected by a variety of factors, including the mix of program revenue and licensing and royalty revenue recognized during the period. We achieve a higher gross margin on licensing and royalty revenue as compared to program revenue.

Gross margin was 57.4% during the year ended December 31, 2015 compared to 48.3% for the year ended December 31, 2014. This increase was primarily attributable to decreased direct labor expense for customer programs and other expenses.

Research and Development

R&D expenses increased by \$4.3 million, or 18%, to \$28.6 million during the year ended December 31, 2015 from \$24.3 million during the year ended December 31, 2014. The increase was primarily attributable to an increase in employee, professional services, and other related costs of \$4.0 million, offset by a decrease of \$0.8 million in depreciation expense due to assets being fully depreciated. Research and development expense included stock-based compensation of \$1.7 million and \$1.2 million during the years ended December 31, 2015 and 2014, respectively.

Sales and Marketing

Sales and marketing expenses increased by \$0.1 million, or 2%, to \$5.9 million during the year ended December 31, 2015 from \$5.8 million during the year ended December 31, 2014. The change was primarily due to higher personnel costs related to increased wage expense and other related benefits, offset by a decrease in stock

based compensation. Sales and marketing expense included stock-based compensation of \$0.7 million and \$1.5 million during the years ended December 31, 2015 and 2014, respectively.

General and Administrative

General and administrative expenses decreased by \$0.3 million, or 3%, to \$12.3 million during the year ended December 31, 2015 from \$12.6 million during the year ended December 31, 2014. This decrease was primarily attributable to \$0.4 million in lower professional and other related administrative expense. General and administrative expense included stock-based compensation of \$2.2 million and \$2.0 million during the years ended December 31, 2015 and 2014, respectively.

Restructuring Charges

Restructuring expenses were zero in the year ended December 31, 2015, compared to \$1.4 million during the year ended December 31, 2014. In January and May 2014, our Board of Directors authorized restructuring plans to reduce our workforce by 18% and 10%, respectively, pursuant to which charges of \$1.1 million and \$0.3 million were incurred for severance and other personnel related costs.

Loss from Operations

Our operating loss decreased by \$0.3 million, to an operating loss of \$20.7 million during the year ended December 31, 2015 from an operating loss of \$21.0 million during year ended December 31, 2014. The decrease in operating loss is consistent with the decrease in net cost of revenue and operating expenses, offset by a decrease in revenue. Our net cost of revenue and operating expenses decreased by \$2.7 million to \$66.0 million for the year ended December 31, 2015, from \$68.7 million for the year ended December 31, 2014, which included \$1.4 million in restructuring related expenses.

Interest Expense, net

On May 31, 2013, we entered into a loan and security agreement with Silicon Valley Bank (SVB) and repaid the remaining principal and accrued interest under the secured promissory note that we issued to Symyx in November 2011. On August 20, 2015, we repaid the balance of the SVB loan and security agreement.

Interest expense, net decreased by \$0.4 million to \$0.3 million during the year ended December 31, 2015 from \$0.7 million during the year ended December 31, 2014 and is primarily comprised of interest expense associated with the Loan Agreement with SVB which was repaid during the year ended December 31, 2015.

Other (Expense) Income, net

Other (expense) income, net, for the years ended December 31, 2015 and 2014 consisted of foreign exchange gains and losses that were not significant during either period.

Provision for Income Taxes

Provision for income taxes during the years ended December 31, 2015 and 2014 consisted of income taxes on our foreign entities and were not significant during either period.

Net Loss

Our net loss decreased by \$0.8 million, to a net loss of \$21.0 million during the year ended December 31, 2015 from a net loss of \$21.8 million during the year ended December 31, 2014. The difference between operating loss and net loss during the year ended December 31, 2015 was primarily related to interest expense associated with the Loan Agreement with SVB.

Quarterly Results of Operations

You should read the following tables presenting our quarterly results of operations in conjunction with the consolidated financial statements and related notes contained elsewhere in this Form 10-K. We have prepared the unaudited information on the same basis as our audited consolidated financial statements. Please note that our operating results for any quarter are not necessarily indicative of results for any future quarters or for a full year. Our unaudited quarterly results of operations for the eight quarters ended December 31, 2016 were as follows (in thousands, except share and per share amounts):

	Three Months Ended							
	December 31, 2016	September 30, 2016	June 30, 2016	March 31, 2016	December 31, 2015	September 30, 2015	June 30, 2015	March 31, 2015
	(unaudited)							
Revenue:								
Program revenue	\$ 8,833	\$ 8,844	\$ 10,052	\$ 11,961	\$ 10,897	\$ 8,684	\$ 7,251	\$ 7,098
Licensing and royalty revenue	1,644	1,730	1,677	2,557	2,058	2,844	3,743	2,747
Total revenue	10,477	10,574	11,729	14,518	12,955	11,528	10,994	9,845
Cost of revenue	3,446	3,456	4,132	4,796	4,149	5,048	4,620	5,487
Gross profit	7,031	7,118	7,597	9,722	8,806	6,480	6,374	4,358
Operating expenses:								
Research and development	5,847	8,451	6,924	6,904	7,494	7,422	7,160	6,500
Sales and marketing	1,518	1,792	2,130	1,943	1,346	1,639	1,587	1,309
General and administrative	2,777	2,667	2,669	2,600	2,520	3,171	3,186	3,410
Restructuring charges	(6)	1,120	—	—	—	—	—	—
Total operating expenses	10,136	14,030	11,723	11,447	11,360	12,232	11,933	11,219
Loss from operations	(3,105)	(6,912)	(4,126)	(1,725)	(2,554)	(5,752)	(5,559)	(6,861)
Other income (expense):								
Interest income (expense), net	50	51	40	32	40	(52)	(121)	(134)
Other income (expense), net	63	88	98	16	(1)	(18)	2	5
Total other income (expense), net	113	139	138	48	39	(70)	(119)	(129)
Loss before provision for income taxes	(2,992)	(6,773)	(3,988)	(1,677)	(2,515)	(5,822)	(5,678)	(6,990)
Provision for income taxes	-	3	1	3	1	2	2	3
Net loss	(2,992)	(6,776)	(3,989)	(1,680)	(2,516)	(5,824)	(5,680)	(6,993)
Net loss per share of common stock, basic	\$ (0.06)	\$ (0.14)	\$ (0.08)	\$ (0.03)	\$ (0.05)	\$ (0.12)	\$ (0.12)	\$ (0.15)
Shares used in computing net loss per share of common stock, basic	49,485,974	49,466,137	49,448,325	49,286,456	48,680,999	48,620,503	47,935,399	47,597,742

Liquidity and Capital Resources

As of December 31, 2016, we had \$27.8 million of cash, cash equivalents and investments and \$27.3 million of net working capital.

To date, we have incurred significant losses. During the years ended December 31, 2016, 2015 and 2014, we incurred net losses of \$15.4 million, \$21.0 million, and \$21.8 million. As of December 31, 2016, our accumulated deficit was \$168.3 million.

We believe that we have the financial resources needed to meet business requirements for the next 12 months. However, our forecast of the period of time through which our financial resources will be adequate to meet business requirements are forward-looking statements and involve risks and uncertainties. Our future capital requirements will depend on many factors, many of which are set forth in greater detail under the caption "Risk Factors," but generally include without limitation our rate of revenue growth, our expansion of our sales and marketing activities and overhead expenses, the timing and extent of our spending to support our R&D efforts and our ability to expand customer programs in the semiconductor industry, whether we are successful in obtaining payments from customers, the financial stability of our customers, whether we can enter into additional programs in our target industries, the

progress and scope of collaborative R&D projects performed by us and our customers, the effect of any acquisitions of other businesses or technologies that we may make in the future, the filing, prosecution and enforcement of patent claims, how much we need to develop or enhance our solutions or HPC platform and any necessary responses to competitive pressures. To the extent that existing cash, cash equivalents, short-term investments and cash from operations are insufficient to fund our operations, we may need to raise additional funds through public or private equity or debt financing. We may also seek to invest in or acquire complementary businesses, applications or technologies, any of which could also require us to seek additional equity or debt financing. Additional funds may not be available on terms favorable to us or at all. We maintain almost all of our cash in the United States and therefore are not subject to restrictions or tax obligations as we access the cash.

Cash Flows

The following summary of our cash flows for the periods indicated has been derived from our consolidated financial statements included elsewhere in this filing:

	Years Ended December 31,		
	2016	2015	2014
Net cash used in operating activities	\$ (5,404)	\$ (4,827)	\$ (1,850)
Net cash (used in) provided by investing activities	\$ (1,214)	\$ 16,578	\$ (47,658)
Net cash (used in) provided by financing activities	\$ 701	\$ (21,840)	\$ (810)

Cash Flows from Operating Activities

We experienced a negative cash flow from operating activities during the year ended December 31, 2016, 2015 and 2014, due primarily to operating results.

Net cash used in operating activities during the year ended December 31, 2016 was primarily attributable to our net loss of \$15.4 million and cash payouts related to accrued compensation liabilities of \$3.1 million, offset by non-cash charges of \$9.5 million for depreciation, amortization, impairment and accretion and \$3.6 million for stock-based compensation.

Net cash used in operating activities during the year ended December 31, 2015 of \$4.8 million was primarily attributable to our net loss of \$21.0 million offset by non-cash charges of \$10.7 million in depreciation, amortization and accretion, \$5.7 million in stock-based compensation. Cash flow from our operating assets and liabilities decreased \$0.2 million primarily as a result of an increase in accounts receivable of \$0.8 million and a decrease in deferred revenue of \$1.2 million, offset by an increase in accrued liabilities of \$3.0 million

Net cash used in operating activities during the year ended December 31, 2014 of \$1.9 million was primarily attributable to our net loss of \$21.8 million offset by non-cash charges of \$11.6 million in depreciation, amortization and accretion, and \$6.0 million in stock-based compensation. Cash flow from our operating assets and liabilities increased \$2.3 million primarily as a result of decrease in accounts receivable of \$1.7 million and inventory usage and obsolescence of \$1.6 million, offset by a decrease in accrued liabilities of \$1.8 million.

We expect that cash flows from operating activities will fluctuate in future periods due to a number of factors, including our operating results, amounts of non-cash charges, and the timing of our billings, collections and disbursements.

Cash Flows from Investing Activities

Our investing activities consist primarily of purchases and maturities of short-term investments, capital expenditures to purchase property and equipment and our investments in intangible assets relating to our patents and trademarks. In the future, we expect we will continue to make modest capital expenditures to support our operations and incur costs to protect our investment in our developed technology and IP.

During the year ended December 31, 2016, cash used in investing activities was a result of \$2.4 million spent in capital expenditures partially offset by \$1.2 million received in the net redemption of our investments.

During the year ended December 31, 2015, cash provided by investing activities was \$16.6 million as a result of \$18.8 million in redemptions, net of maturities, of short-term investments, offset by \$1.5 million in capital expenditures and \$0.8 million in capitalized patent and trademark costs

During the year ended December 31, 2014, cash used in investing activities was \$47.7 million as a result of \$43.6 million in purchases, net of maturities, of short-term investments, \$2.8 million in capital expenditures and \$1.2 million in capitalized patent and trademark costs.

Cash Flows from Financing Activities

To date, we have financed our operations primarily with proceeds from the sale of our redeemable convertible preferred stock and proceeds received from our initial public offering. In 2013 we entered into a term loan with SVB and in 2015 we repaid the loan in full.

During the year ended December 31, 2016, cash provided by financing activities of \$0.7 million was primarily from proceeds from common stock option exercises.

During the year ended December 31, 2015, cash used in financing activities was \$21.8 million, primarily as a result of principal payments on our term loan to SVB of \$23.0 million, offset by proceeds from the exercise of common stock options of \$1.2 million.

During the year ended December 31, 2014, cash used in financing activities was \$0.8 million, primarily as a result of principal payments on our term loan to SVB of \$2.0 million offset by proceeds from the exercise of common stock options of \$1.2 million.

Contractual Obligations and Commitments

The following summarizes our contractual obligations as of December 31, 2016 (in thousands):

	Payments Due by Period				
	Total	Less Than One Year	1 - 3 Years	3 - 5 Years	More Than 5 Years
Operating lease obligations	\$ 22,415	\$ 2,198	\$ 4,970	\$ 5,221	\$ 10,026
Capital lease obligations	75	31	44	—	—
Purchase obligations	378	378	—	—	—
Total	\$ 22,868	\$ 2,607	\$ 5,014	\$ 5,221	\$ 10,026

Operating lease agreements represent our obligations to make payments under our non-cancelable lease agreement for our facility in San Jose, California. During the year ended December 31, 2016, we made regular lease payments of \$2.4 million under this operating lease agreement and our lease obligation under the agreement as of December 31, 2016 was \$22.4 million. Capital lease agreements represent our obligations to make payments under the lease agreement for a Camco furnace which is scheduled to end in the second quarter of 2019. Purchase obligations consist of firm, non-cancelable agreements to purchase property and equipment and inventory items.

Off-Balance Sheet Arrangements

As of December 31, 2016, we did not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Recent Accounting Pronouncements

See Note 1 of the Notes to Consolidated Financial Statements included in this Form 10-K for recent accounting pronouncements that could have an effect on us.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risks in the ordinary course of our business. Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure is primarily a result of fluctuations in interest rates and foreign currency exchange rates. We do not hold or issue financial instruments for trading purposes.

Interest Rate Sensitivity

Our exposure to market risk for changes in interest rates relates primarily to our investment portfolio. Our cash, cash equivalents and investment accounts as of December 31, 2016 totaled \$27.8 million consisting of cash equivalents and investments in a variety of securities, including commercial paper, corporate debt securities and money market funds. If overall interest rates fell 10% for the year ended December 31, 2016, our interest income would have decreased by an immaterial amount, assuming consistent investment levels.

Our primary exposure to market risk is interest income sensitivity, which is affected by changes in the general level of the interest rates in the United States. However, because of the short-term nature of the instruments in our portfolio, a sudden change in market interest rates would not be expected to have a material impact on our consolidated financial condition or our results of operation.

Foreign Currency Exchange Risk

As we expand internationally, our consolidated results of operations and cash flows will become increasingly subject to fluctuations due to changes in foreign currency exchange rates. Our revenue is denominated in U.S. dollars. Our expenses are generally denominated in the currencies in which our operations are located, which is primarily in the United States, with an insignificant portion of expenses incurred in our wholly-owned subsidiaries in Hong Kong and Japan and our wholly-owned branch in Taiwan in their local currencies. The effect of a hypothetical 10% change in foreign currency exchange rates applicable to our business would not have a material impact on our consolidated financial statements. To date, we have not entered into any material foreign currency hedging contracts although we may do so in the future.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Intermolecular, Inc.:

We have audited the accompanying consolidated balance sheet of Intermolecular, Inc. ("Company") as of December 31, 2016, and the related consolidated statements of operations, comprehensive loss, stockholders' equity, and cash flows for the year then ended. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Intermolecular, Inc. as of December 31, 2016, and the consolidated results of its operations and its cash flows for the year then ended in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the effectiveness of Intermolecular, Inc.'s internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control – Integrated Framework (2013 framework) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated March 3, 2017, expressed an unqualified opinion thereon.

/s/ Armanino LLP

San Ramon, California
March 3, 2017

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Intermolecular, Inc.:

We have audited Intermolecular, Inc.'s internal control over financial reporting as of December 31, 2016, 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). Intermolecular, Inc.'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 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 conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). 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.

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.

In our opinion, Intermolecular, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the 2016 consolidated financial statements of Intermolecular, Inc. and our report dated March 3, 2017, expressed an unqualified opinion thereon.

/s/ Armanino LLP

San Ramon, California
March 3, 2017

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Intermolecular, Inc.:

We have audited the accompanying consolidated balance sheet of Intermolecular, Inc. and subsidiaries (the Company) as of December 31, 2015, and the related consolidated statements of operations, comprehensive loss, stockholders' equity, and cash flows for each of the years in the two year period ended December 31, 2015. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Intermolecular, Inc. and subsidiaries as of December 31, 2015, and the results of their operations and their cash flows for each of the years in the two year period ended December 31, 2015, in conformity with U.S. generally accepted accounting principles.

/s/ KPMG LLP

Santa Clara, California
March 28, 2016

INTERMOLECULAR, INC. AND SUBSIDIARIES
Consolidated Balance Sheets
(In thousands, except share and per share data)

	<u>December 31, 2016</u>	<u>December 31, 2015</u>
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 5,759	\$ 11,676
Short-term investments	20,035	23,656
Accounts receivable, net of allowance for doubtful accounts of \$0 as of December 31, 2016 and December 31, 2015	5,063	6,114
Prepaid expenses and other current assets	1,397	1,608
Total current assets	<u>32,254</u>	<u>43,054</u>
Long-term investments	1,995	—
Materials inventory	3,357	4,413
Property and equipment, net	10,964	15,735
Intangible assets, net	4,001	5,969
Other assets	597	506
Total assets	<u>\$ 53,168</u>	<u>\$ 69,677</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 309	\$ 848
Accrued liabilities	1,451	2,385
Accrued compensation and employee benefits	1,663	4,416
Deferred revenue	1,533	2,595
Total current liabilities	<u>4,956</u>	<u>10,244</u>
Deferred rent, net of current portion	3,149	3,299
Other long-term liabilities	67	35
Total liabilities	<u>8,172</u>	<u>13,578</u>
Commitments and contingencies (note 5)		
Stockholders' equity:		
Common stock, par value \$0.001 per share—200,000,000 shares authorized; 49,513,528 and 49,092,260 shares issued and outstanding as of December 31, 2016 and December 31, 2015, respectively	50	49
Additional paid-in capital	213,313	208,972
Accumulated other comprehensive loss	(32)	(24)
Accumulated deficit	(168,335)	(152,898)
Total stockholders' equity	<u>44,996</u>	<u>56,099</u>
Total liabilities and stockholders' equity	<u>\$ 53,168</u>	<u>\$ 69,677</u>

See accompanying notes to consolidated financial statements

INTERMOLECULAR, INC. AND SUBSIDIARIES
Consolidated Statements of Operations
(In thousands, except share and per share data)

	Years Ended December 31,		
	2016	2015	2014
Revenue:			
Program revenue	\$ 39,690	\$ 33,930	\$ 30,624
Licensing and royalty revenue	7,608	11,392	17,071
Total revenue	47,298	45,322	47,695
Cost of revenue:			
Cost of program revenue	15,705	18,965	24,358
Cost of licensing and royalty revenue	125	339	293
Total cost of revenue	15,830	19,304	24,651
Gross profit	31,468	26,018	23,044
Operating expenses:			
Research and development	28,126	28,576	24,320
Sales and marketing	7,383	5,881	5,770
General and administrative	10,713	12,287	12,636
Restructuring charges	1,114	—	1,361
Total operating expenses	47,336	46,744	44,087
Loss from operations	(15,868)	(20,726)	(21,043)
Other income (expense):			
Interest income (expense), net	173	(267)	(682)
Other income (expense), net	265	(12)	(29)
Total other income (expense), net	438	(279)	(711)
Loss before provision for income taxes	(15,430)	(21,005)	(21,754)
Provision for income taxes	7	8	7
Net loss	\$ (15,437)	\$ (21,013)	\$ (21,761)
Net loss per share, basic and diluted	\$ (0.31)	\$ (0.44)	\$ (0.47)
Weighted-average number of shares used in computing net loss per share, basic and diluted	49,395,635	48,158,378	46,718,495

Related Party Transactions

The Consolidated Statements of Operations shown above include the following related party transactions:

	Years Ended December 31,		
	2016	2015	2014
Revenue:			
Program revenue	\$ 267	\$ 35	\$ 1,114
Licensing and royalty revenue	1,741	3,279	4,480
Total revenue	\$ 2,008	\$ 3,314	\$ 5,594
Cost of Revenue:			
Cost of program revenue	\$ 102	\$ —	\$ —
Cost of licensing and royalty revenue	29	—	—
Total cost of revenue	\$ 131	\$ —	\$ —

See accompanying notes to consolidated financial statements

INTERMOLECULAR, INC. AND SUBSIDIARIES
 Consolidated Statements of Comprehensive Loss
 (In thousands)

	Years Ended December 31,		
	2016	2015	2014
Net loss	\$ (15,437)	\$ (21,013)	\$ (21,761)
Change in unrealized gain (loss) on available-for-sale- securities, net of tax	(8)	13	(37)
Other comprehensive income (loss)	(8)	13	(37)
Comprehensive loss, net of income tax	\$ (15,445)	\$ (21,000)	\$ (21,798)

See accompanying notes to consolidated financial statements

INTERMOLECULAR, INC. AND SUBSIDIARIES
Consolidated Statements of Stockholders' Equity
(In thousands, except share data)

	Stockholders' Equity					
	Common stock Shares	Common stock Amount	Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive loss	Total stockholders' equity
Balances as of December 31, 2013	46,486,372	\$ 46	\$ 194,930	\$ (110,124)	\$ —	\$ 84,852
Issuance of common stock from option exercises	593,173	2	1,188	—	—	1,190
Issuance of restricted stock awards (in shares)	404,749	—	—	—	—	—
Vesting of restricted stock units	129,856	—	—	—	—	—
Stock-based compensation	—	—	6,021	—	—	6,021
Other comprehensive loss	—	—	—	—	(37)	(37)
Net loss	—	—	—	(21,761)	—	(21,761)
Balances as of December 31, 2014	47,614,150	48	202,139	(131,885)	(37)	70,265
Issuance of common stock from option exercises	1,126,795	1	1,160	—	—	1,161
Forfeiture of restricted stock awards, net	(136,444)	—	—	—	—	—
Vesting of restricted stock units	487,759	—	—	—	—	—
Stock-based compensation	—	—	5,673	—	—	5,673
Other comprehensive loss	—	—	—	—	13	13
Net loss	—	—	—	(21,013)	—	(21,013)
Balances as of December 31, 2015	49,092,260	49	208,972	(152,898)	(24)	56,099
Issuance of common stock from option exercises	369,173	1	714	—	—	715
Forfeiture of restricted stock awards, net	(62,500)	—	—	—	—	—
Vesting of restricted stock units	114,595	—	—	—	—	—
Stock-based compensation	—	—	3,627	—	—	3,627
Other comprehensive loss	—	—	—	—	(8)	(8)
Net loss	—	—	—	(15,437)	—	(15,437)
Balances as of December 31, 2016	<u>49,513,528</u>	<u>\$ 50</u>	<u>\$ 213,313</u>	<u>\$ (168,335)</u>	<u>\$ (32)</u>	<u>\$ 44,996</u>

See accompanying notes to consolidated financial statements

INTERMOLECULAR, INC. AND SUBSIDIARIES
Consolidated Statements of Cash Flows
(In thousands)

	Years Ended December 31,		
	2016	2015	2014
Cash flows from operating activities:			
Net loss	\$ (15,437)	\$ (21,013)	\$ (21,761)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation, amortization, and accretion	9,537	10,728	11,577
Stock-based compensation	3,627	5,673	6,021
(Gain) loss on disposal of property and equipment	(12)	18	—
Realized loss from investment	—	8	—
Changes in operating assets and liabilities:			
Prepaid expenses and other assets	122	(42)	94
Materials inventory	333	(319)	1,581
Accounts receivable	1,051	(793)	1,701
Accounts payable	(493)	(24)	(635)
Accrued and other liabilities	(3,069)	2,985	(1,769)
Deferred revenue	(1,063)	(1,217)	895
Related party deferred revenue	—	(831)	446
Net cash used in operating activities	<u>(5,404)</u>	<u>(4,827)</u>	<u>(1,850)</u>
Cash flows from investing activities:			
Purchase of investments	(23,486)	(32,577)	(48,451)
Redemption of investments	24,676	51,410	4,802
Purchase of property and equipment	(2,381)	(1,452)	(2,815)
Proceeds from sale of equipment	22	—	—
Purchased and capitalized intangible assets	(45)	(803)	(1,194)
Net cash (used in) provided by investing activities	<u>(1,214)</u>	<u>16,578</u>	<u>(47,658)</u>
Cash flows from financing activities:			
Payment of debt	—	(23,000)	(2,000)
Payment of capital leases	(13)	—	—
Proceeds from exercise of common stock options	714	1,160	1,190
Net cash (used in) provided by financing activities	<u>701</u>	<u>(21,840)</u>	<u>(810)</u>
Net decrease in cash and cash equivalents	(5,917)	(10,089)	(50,318)
Cash and cash equivalents at beginning of period	11,676	21,765	72,083
Cash and cash equivalents at end of period	<u>\$ 5,759</u>	<u>\$ 11,676</u>	<u>\$ 21,765</u>
Supplemental disclosure of cash flow information:			
Cash paid for interest	\$ 9	\$ 652	\$ 666
Cash paid for income taxes, net of refunds received	\$ 6	\$ 5	\$ 21
Noncash investing/operating activities:			
Transfer of property and equipment to materials inventory	\$ 791	\$ 1,543	\$ 999
Transfer of materials inventory to property and equipment	\$ 1,515	\$ 3,373	\$ —
Additions to property, equipment and intangible assets not paid at the end of the period	<u>\$ 84</u>	<u>\$ 853</u>	<u>\$ 360</u>

See accompanying notes to consolidated financial statements

INTERMOLECULAR, INC. AND SUBSIDIARIES

Notes to Consolidated Financial Statements

1. Summary of Significant Accounting Policies

Business

Intermolecular, Inc. and subsidiaries (the Company) is headquartered in San Jose, California and has wholly-owned subsidiaries in Hong Kong and Japan and a wholly-owned branch in Taiwan.

The Company is a trusted partner for advanced materials innovation. The Company believes advanced materials are at the core of innovation in the 21st century for a wide range of industries including semiconductors, consumer electronics, automotive and aerospace. With its substantial materials expertise, accelerated learning and experimentation platform, and information and analytics infrastructure, the Company has a track record helping leading companies accelerate and de-risk materials innovation.

The Company's consolidated financial statements have been prepared on a going-concern basis, which contemplates the realization of assets and the settlement of liabilities and commitments in the normal course of business. Since inception, the Company has incurred net losses and has accumulated a deficit of \$168.3 million and \$152.9 million as of December 31, 2016 and 2015, respectively.

Basis of Presentation

The Company's consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America (GAAP) and include the accounts of the Company and its consolidated subsidiaries. All intercompany transactions and balances have been eliminated during consolidation. Certain amounts in the prior year's presentations have been reclassified to conform to the current presentation. These reclassifications had no effect on previously reported net income.

Use of Estimates

The preparation of the accompanying consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions about future events. These estimates and the underlying assumptions affect the amounts of assets and liabilities reported, disclosures about contingent assets and liabilities, and reported amounts of revenue and expenses. Management uses estimates and judgments in determining recognition of revenues, valuations of accounts receivable, inventories, intangible assets, warrants and assumptions used in the calculation of income taxes and stock-based compensation, among others. These estimates and assumptions are based on management's best estimates and judgment. Management evaluates its estimates and assumptions on an ongoing basis using historical experience and other factors and adjusts such estimates and assumptions when facts and circumstances dictate. As future events and their effects cannot be determined with precision, actual results could differ significantly from these estimates.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentration of credit risk consist of cash, cash equivalents and accounts receivable. The Company's cash and cash equivalents consist of demand deposits and money market accounts maintained with high quality financial institutions. The Company's accounts receivable consist of non-interest bearing balances due from credit-worthy customers.

Cash, Cash Equivalents and Investments

The Company holds its cash and cash equivalents in checking, money market and investment accounts with high credit quality financial institutions. The Company considers all highly liquid investments with original maturities of three months or less when purchased to be cash equivalents.

Short-term investments consist principally of corporate debt securities and commercial paper. If applicable, the Company considers marketable securities with remaining time to maturity greater than one year to be classified as long-term. The Company considers all other marketable securities to be short-term marketable securities. The short-term marketable securities are classified as current assets because they can be readily converted into securities with a shorter remaining time to maturity or into cash. The Company determines the appropriate classification of its marketable securities at the time of purchase and re-evaluates such designations as of each balance sheet date. All marketable securities and cash equivalents in the portfolio are classified as available-for-sale and are stated at fair value, with all the associated unrealized gains and losses reported as a component of accumulated other comprehensive income (loss). Fair value is based on quoted market rates or direct and indirect observable markets for these investments. The amortized cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity. Such amortization and accretion are included in interest income. The cost of securities sold and any gains and losses on sales are based on the specific identification method.

The Company reviews its investment portfolio periodically to assess for other-than-temporary impairment in order to determine the classification of the impairment as temporary or other-than-temporary, which involves considerable judgment regarding factors such as the length of the time and the extent to which the market value has been lower than the amortized cost, the nature of underlying assets, and the financial condition, credit rating, market liquidity conditions and near-term prospects of the issuer. If the fair value of a debt security is less than its amortized cost basis at the balance sheet date, an assessment would have to be made as to whether the impairment is other-than-temporary. If the Company considers it more likely than not that it will sell the security before it will recover its amortized cost basis, an other-than-temporary impairment will be considered to have occurred. An other-than-temporary impairment will also be considered to have occurred if the Company does not expect to recover the entire amortized cost basis of the security, even if it does not intend to sell the security. The Company has recognized no other-than-temporary impairments for its marketable securities.

Materials Inventory

Materials inventory are stated at the lower of cost or market value, with cost determined on an average cost basis. Noncurrent materials inventory consist of raw materials in the amount of \$3.4 million and \$4.4 million, as of December 31, 2016 and December 31, 2015, respectively. Materials inventory is used to build and as replacement parts for repairs and maintenance on property plant and equipment. Inventory is no longer purchased for resale as in prior years. Materials inventory that are determined to be in excess of the company requirements or are considered obsolete, are recorded as a cost of revenue in the period in which they occur. The Company recorded inventory impairment charges of \$0.8 million, \$1.0 million and \$1.9 million for the year ended December 31, 2016, 2015 and 2014, respectively.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation and amortization. Depreciation of equipment is recognized on a straight-line basis over the estimated useful lives of the equipment, generally ranging from three to five years. Leasehold improvements are amortized over the shorter of the lease term or the estimated useful life of the assets. Maintenance and repairs that do not extend the life of or improve an asset are expensed in the period incurred.

Intangible Assets

Intangible assets consist of issued and pending patents and trademarks as a result of third-party legal fees incurred in the patent and trademark application processes and patents acquired. Intangible assets with finite lives are amortized on a straight-line basis over their useful lives, while intangible assets without finite lives are not amortized.

Upon the issuance of pending patent and trademark applications, the period of benefit will be determined. Patents, upon issuance, have a maximum life of 20 years from their application filing date. Trademarks, upon issuance, have an indefinite life and will not be amortized.

Impairment of Long-Lived Assets

The Company evaluates its long-lived assets, which consist of property and equipment and intangible assets, for indicators of possible impairment when events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. In addition, the company reviews and tests its long-lived assets for impairment at least annually. Impairment exists if the carrying amounts of such assets exceed the estimates of future net undiscounted cash flows expected to be generated by such assets. Should impairment exist, the impairment loss would be measured based on the excess carrying value of the asset over the estimated fair value of the asset. The Company generally records impairment of long-lived assets in research and development expense on the Consolidated Statements of Operations. The Company recorded a \$0.9 million impairment loss on property and equipment and a \$1.0 million impairment loss on intangible assets during the year ended December 31, 2016. During the years ended December 31, 2015 and December 31, 2014, the Company did not record any impairment of long-lived assets.

Revenue Recognition

The Company derives its revenue from two principal sources: research and development programs; and other services, which consist of technology licensing and royalty fees. Product sales have been made historically, but are not a principal source of revenue. Revenue is recognized when all of the following criteria are met:

- Persuasive evidence of an arrangement exists;
- Delivery has occurred or services have been rendered;
- The fee is fixed or determinable; and
- Collectability of the fee is probable.

Persuasive evidence of the arrangement represents a written contract signed by both the Company and the customer, or a customer purchase order. The Company assesses whether a price is fixed or determinable by, among other things, reviewing contractual terms and conditions related to payment terms. The Company assesses collectability based on factors such as the customer's creditworthiness and past collection history, if applicable. If collection is not probable, revenue recognition is deferred until receipt of payment.

Program revenue - The Company enters into development programs and other research and development service agreements with customers under which the Company conducts research and development activities with customers. The agreements specify minimum levels of research effort required to be performed by the Company. Payments received under the agreements are not refundable if the research effort is not successful. In some contracts, the Company retains rights to certain elements of technology developed in the course of its performance, which the customer has an option to license in the future under the terms defined in the agreement. The Company generates a significant portion of its program revenue from certain research and development service contracts delivered over a specific period of time. These contracts require reliable estimation of costs to perform obligations and the overall scope of each engagement. Revenue under project-based contracts for those programs is recognized as services are performed using percentage of completion method of contract accounting based on output or input (i.e., costs or labor-hours) method, whichever is the most appropriate measure of the progress towards completion of the contract. Losses on the contracts are recognized in the period when they become probable. Revisions in profit estimates are reflected in the period in which the conditions that require the revisions become known and can be estimated. Additionally, some of Company's arrangements with customers have fixed monthly fees and requirements to provide regular reporting of research and development activities performed, and revenue is recognized in a manner consistent with the fixed monthly fee. Payments received prior to performance are deferred and recognized as revenue when earned over future performance periods.

Licensing and royalty revenue - The Company recognizes revenue for licenses to intellectual property when earned pursuant to the terms of the agreements. Time-based license revenue is recognized ratably over the license term. Licensing and royalty revenue that becomes triggered by specific customer actions, such as exercise of a license option or by sales volume, is recognized when it occurs based on royalty reports or other information received from the licensee. Minimum and prepaid royalties and license fees are recognized ratably over the related periods. Revenue on the sale of intellectual property is recognized in full when title transfers if there are no remaining deliverables related to the intellectual property purchase.

Multiple-element arrangements - Certain of the Company's customer arrangements involve the delivery or performance of multiple products, services or licenses. Product sale arrangements include product maintenance and support. Development programs and other research and development services include licenses of technology and may also include sales of products. For multiple-element arrangements that include hardware products containing software essential to the hardware product's functionality, undelivered software elements that relate to the hardware product's essential software, and undelivered non-software services, the Company allocates revenue to all deliverables based on their relative selling prices.

The Company evaluates each element in a multiple-element arrangement to determine whether it represents a separate unit of accounting. An element constitutes a separate unit of accounting when it has standalone value and delivery of an undelivered element is both probable and within our control. When these criteria are not met, the delivered and undelivered elements are combined and the arrangement fees are allocated to this combined single unit. If the unit separation criteria are met, we account for each element within a multiple-element arrangement separately, whereby the total arrangement fees are allocated to each element based on its relative selling price, which we establish using a selling price hierarchy. The Company determines the selling price of each element based on its vendor-specific objective evidence (VSOE), if available, third party evidence (TPE), if VSOE is not available, or estimate of selling price (ESP) if neither VSOE nor TPE is available. The Company does not recognize revenue that is contingent upon the future delivery of products or services or upon future performance obligations. Essential and non-essential software deliverables used in conjunction with products are evaluated as to whether industry specific software accounting guidance applies to the product as well as the related software. In instances where software is considered non-essential to the functionality of the product, only the software portion and post contract support is evaluated under industry specific software accounting guidance. For purposes of classification in the consolidated statements of operations, revenue is allocated between program revenue and licensing and royalty revenue based on objective and reliable evidence of fair value for any elements for which it exists or based on the relative stated invoice amount for elements for which objective and reliable evidence of fair value does not exist. In multiple-element arrangements where hardware and software are sold as part of the solution, revenue is allocated to the hardware and software as a group using the relative selling prices of each of the deliverables in the arrangement based upon the aforementioned selling price hierarchy.

Deferred Revenue

Deferred revenue represents amounts collected from customers for which the related revenue has not been recognized, because one or more of the revenue recognition criteria have not been met, net of the associated costs. The current portion of deferred revenue represents the amount that is expected to be recognized as revenue within one year from the balance sheet date. When deferred revenues are recognized as revenues, the associated deferred costs are also recognized as cost of revenues.

Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at invoiced amounts and unbilled contractually obligated amounts. Trade accounts receivable are presented net of allowances for doubtful accounts, if applicable, and do not bear interest. The allowance for doubtful accounts is based on the Company's assessment of the collectability of its customer accounts. The Company reviews the allowance by considering certain factors such as historical experience, industry data, credit quality, age of balances and current economic conditions that may affect customers' ability to pay. The Company did not have any allowances for doubtful accounts as of December 31, 2016, December 31, 2015 and December 31, 2014.

Concentration of Revenue and Accounts Receivable

Significant customers are those that represent 10% or more of the Company's total revenue or accounts receivable. For each significant customer, including related parties, revenue as a percentage of total revenue and accounts receivable as a percentage of total accounts receivable are as follows:

	Revenue			Accounts Receivable	
	Years Ended December 31,			As of December 31,	As of December 31,
	2016	2015	2014	2016	2015
Customer A	17%	36%	35%	—	48%
Customer B	10%	11%	16%	*	*
Customer C	10%	18%	*	—	16%
Customer D	38%	*	—	69%	13%
Customer G	—	—	11%	—	—
Customer I	*	—	—	14%	—

* less than 10%

Cost of Revenue

Cost of revenue is primarily comprised of salaries and other personnel-related expenses for research and development scientists, engineers and development process operations employees. Additionally, cost of revenue includes wafers, targets, materials, program-related supplies, depreciation on equipment used in programs and allocated facility-related costs.

Inventory obsolescence and customer related asset impairments are included in cost of program and services revenue. Product cost of revenue consists of cost of products sold. Cost of licensing and royalty includes amortization of acquired patents and licensing obligations.

Research and Development

Research and development expenses, including direct and allocated expenses, are expensed as incurred. Research and development costs include salaries of technical staff, consultant costs, research and development parts and prototypes, wafers, chemicals, research and development supply costs, facilities rental, utilities costs related to laboratories and offices occupied by technical staff, depreciation on equipment used by technical staff, impairment expense, and outside services, such as machining and third-party research and development costs.

Income Taxes

Income taxes have been accounted for under the asset and liability method. Deferred tax assets and liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities as measured by the enacted tax rates that will be in effect when these differences reverse. Accordingly, realization of any deferred tax assets is dependent on future taxable income against which these deductions, losses and credits can be utilized.

The Company assesses the likelihood that the deferred tax assets will be recovered and establishes a valuation allowance to the extent the Company believes that it is more likely than not that all or some portion of the asset will not be realized due to the inability to generate sufficient taxable income in the period and/or of the character necessary to utilize the benefit of the deferred tax asset. The Company recorded a full valuation allowance against its deferred tax assets as of December 31, 2016 and 2015. Based on the available evidence, the Company believed it was more likely than not that it would not be able to utilize its deferred tax assets in the future. The Company intends to maintain a full valuation allowance until and if sufficient evidence exists to support all or a portion of its reversal.

The Company regularly reviews its tax positions for benefits to be realized. A tax position must be more likely than not to be sustained upon examination to justify recognition of a benefit for that position. The amount recognized is measured as the largest amount of benefit that is more likely than not to be realized upon settlement. The Company's policy is to recognize interest and penalties related to income tax matters as income tax expense. As of December 31, 2016, the Company has not recognized any interest or penalties associated with unrecognized tax benefits.

Stock-Based Compensation

The Company applies the fair value recognition and measurement provisions of Accounting Standard Codification (ASC) 718 Compensation — Stock Compensation. The Company measures and recognizes compensation expense for all stock-based payment awards issued to employees and directors including employee stock options and restricted stock units based on estimated fair values. The Company uses the grant-date fair value of its common stock to determine the fair value of restricted stock units. The Company uses the Black-Scholes option pricing model to determine the fair value of stock options. Stock-based compensation cost is recorded net of estimated forfeitures on a straight-line basis over the requisite service period (generally the vesting period).

The Company accounts for stock options issued to nonemployees based on the fair value of the options determined using the Black-Scholes option-pricing model. The fair value of stock options granted to nonemployees is remeasured each reporting period as the stock options vest and the resulting change in value, if any, is recognized in the Company's consolidated statements of operations during the period the related services are rendered.

Employee Savings Plan

The Company has a savings plan in the United States that qualifies under Section 401(k) of the Internal Revenue Code. Participating employees may contribute up to the statutory limits. The Company is not committed to make and has not made employer contributions to the plan to date.

Segment Information

The Company operates in one reportable segment. The Company's chief operating decision-maker, its chief executive officer, reviews its operating results on an aggregate basis and manages its operations as a single operating segment.

Fair Value of Financial Instruments

The Company measures and reports its cash equivalents and short-term investments at fair value. Fair value is defined as the exchange price that would be received for an asset or an exit price paid to transfer a liability in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The fair value hierarchy defines a three-level valuation hierarchy for disclosure of fair value measurements as follows:

Level I - Unadjusted quoted prices in active markets for identical assets or liabilities;

Level II - Inputs other than quoted prices included within Level I that are observable, unadjusted quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the related assets or liabilities; and

Level III - Unobservable inputs that are supported by little or no market activity for the related assets or liabilities.

The categorization of a financial instrument within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

The Company's financial instruments consist of Level I and Level II assets. Level I securities include highly liquid money market funds and certificates of deposit and Level II securities include corporate debt securities and commercial paper. There were no Level III assets or liabilities during the three year period ended December 31, 2016.

Foreign Currency

The functional currency of foreign subsidiaries is the U.S. dollar and foreign currency transaction gains and losses are recorded in other income (expense), net.

Net Loss per Share of Common Stock

The Company's basic net loss per share of common stock is calculated by dividing the net loss by the weighted average number of shares of common stock outstanding for the period. The diluted net loss per share of common stock is computed by giving effect to all potential common stock equivalents outstanding for the period determined using the treasury stock method for common stock equivalents. For purposes of this calculation, options to purchase common stock, common stock subject to repurchase and warrants to purchase common stock are considered to be common stock equivalents but have been excluded from the calculation of diluted net loss per share of common stock as their effect is antidilutive.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update No. 2014-09 (ASU 2014-09) "Revenue from Contracts with Customers." ASU 2014-09 supersedes the revenue recognition requirements in "Revenue Recognition (Topic 605)", and requires entities to recognize revenue when it transfers promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled to in exchange for those goods or services. As currently issued, the standard is effective beginning in the first quarter of fiscal year 2018. The Company is currently in the process of evaluating the impact of the adoption of ASU 2014-09 on the consolidated financial statements.

In July 2015, the FASB issued ASU No. 2015-11, "Simplifying the Measurement of Inventory." ASU 2015-11 changes the measurement principle for inventory from the lower of cost or market to the lower of cost and net realizable value and will be effective for annual reporting periods beginning after December 15, 2016. Early adoption is permitted and the Company does not expect the adoption of ASU 2015-11 to have a material effect on the consolidated financial statements.

In January 2016, the FASB issued ASU No. 2016-01, Financial Instruments - Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities. The new guidance enhances the reporting model for financial instruments, which includes amendments to address aspects of recognition, measurement, presentation and disclosure. The update to the standard is effective for the Company in the first quarter of fiscal 2018, with early adoption permitted under limited circumstances. The Company is currently evaluating the effect the Standard will have on its consolidated financial statements.

In February 2016, the FASB issued ASU No. 2016-02, Leases. ASU 2016-02 requires that lease arrangements longer than 12 months result in an entity recognizing an asset and liability. The updated guidance is effective for interim and annual periods beginning after December 15, 2018, and early adoption is permitted. The Company is currently evaluating the effect the Standard will have on its consolidated financial statements.

In March 2016, the FASB issued ASU No. 2016-09, Improvements to Employee Share-Based Payment Accounting, which simplifies the accounting for share-based payment transactions, including income tax consequences, classification of awards as either equity or liabilities and classification on the cash flow statements. The ASU will be effective for the Company in the first quarter of fiscal 2017. The Company is currently evaluating the effect the Standard will have on its consolidated financial statements.

2. Fair Value of Financial Instruments

The Company measures and reports its cash equivalents and investments at fair value. The carrying amounts for cash equivalents and investments approximate their fair values. The following tables set forth the fair value of the Company's cash equivalents and investments by level within the fair value hierarchy (in thousands):

	As of December 31, 2016			
	Fair Value	Level I	Level II	Level III
Assets:				
Money market funds	\$ 2,669	\$ 2,669	\$ —	\$ —
Corporate debt securities and commercial paper	22,030	—	22,030	—
Total assets measured at fair value	<u>\$ 24,699</u>	<u>\$ 2,669</u>	<u>\$ 22,030</u>	<u>\$ —</u>

	As of December 31, 2015			
	Fair Value	Level I	Level II	Level III
Assets:				
Money market funds	\$ 98	\$ 98	\$ —	\$ —
Corporate debt securities and commercial paper	23,656	—	23,656	—
Total assets measured at fair value	<u>\$ 23,754</u>	<u>\$ 98</u>	<u>\$ 23,656</u>	<u>\$ —</u>

Investments are classified as "available-for-sale" and are carried at fair value based on quoted markets or other readily available market information. The Company's investment policy requires investments to have a less than twenty four month maturity term and a minimum credit rating of A-. Unrealized gains and losses, net of taxes, are included in accumulated other comprehensive income (loss). Gains and losses are determined using the specific identification method. Cash, cash equivalents, and investments consisted of the following as of December 31, 2016 (in thousands):

	As of December 31, 2016			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Assets:				
Cash	\$ 3,090	\$ —	\$ —	\$ 3,090
Money market funds	2,669	—	—	2,669
Corporate debt securities and commercial paper	22,062	—	(32)	22,030
Total cash, cash equivalents and investments	<u>\$ 27,821</u>	<u>\$ —</u>	<u>\$ (32)</u>	<u>\$ 27,789</u>

As of December 31, 2015 the Company had \$24,000 of unrealized losses.

3. Property and Equipment

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

	As of	
	December 31, 2016	December 31, 2015
Lab equipment and machinery (1)	\$ 58,289	\$ 55,649
Leasehold improvements	6,246	6,116
Computer equipment and software	4,640	4,263
Furniture and fixtures	219	207
Construction in progress	590	1,625
Total property and equipment	69,984	67,860
Less accumulated depreciation	(59,020)	(52,125)
Property and equipment, net	\$ 10,964	\$ 15,735

(1) Included \$90,000 (in net book value) and \$0 of lab equipment and machinery acquired under capital leases, as of December 31, 2016 and 2015, respectively. See Note 5 for detailed lease information.

During fiscal 2016, the Company determined that it identified indicators of impairment relating to certain lab equipment. Based on this evaluation, the Company recorded an impairment charge of \$0.9 million. Fair value was based on expected future cash flows using Level 3 inputs under ASC 820. Because of changing market conditions, it is reasonably possible that the estimate of expected future cash flows may change in the near term resulting in the need to further adjust our determination of fair value. As discussed in Note 1, Impairment of Long-Lived Assets, the Company did not record any impairment-related expenses during the year ended December 31, 2015.

The following table presents depreciation expense included in the Consolidated Statement of Operations and includes amortization of leasehold improvements (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Depreciation expense	\$ 7,141	\$ 7,314	\$ 10,220

4. Intangible Assets

Intangible assets consist of the following (in thousands):

	As of	
	December 31, 2016	December 31, 2015
Patents issued	\$ 4,892	\$ 6,180
Patents pending	385	1,156
Trademarks	40	40
Total intangible assets	5,317	7,376
Less patent amortization	(1,316)	(1,407)
Intangible assets, net	\$ 4,001	\$ 5,969

Amortization commences upon patent issuance. The useful life of the patents, once issued, will not exceed 20 years, and will depend on the nature of the patent. The average estimated amortization period of the Company's current portfolio is approximately 17 years from the date of patent issuance factoring in approximately 3 years on average for prosecution of the pending patents.

During fiscal 2016, the Company identified certain patents with carrying values deemed to not be recoverable. Based on this evaluation, the Company recorded an impairment charge of \$1.0 million related to these patents. Fair value was based on expected future cash flows using Level 3 inputs under ASC 820. The cash flows are those

expected to be generated by the market participants, discounted at the risk-free rate of interest. Because of changing market conditions (i.e., less marketplace demand and rising interest rates), it is reasonably possible that the estimate of expected future cash flows may change in the near term resulting in the need to further adjust our determination of fair value. As discussed in Note 1, Impairment of Long-Lived Assets, the Company did not record any impairment-related expenses during the year ended December 31, 2015.

The following table presents patent amortization expense included in the Consolidated Statement of Operations (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Amortization expense	\$ 489	\$ 995	\$ 688

Estimated future aggregate annual amortization expense for both issued and pending intangible assets is as follows (in thousands):

As of December 31:	
2017	\$ 416
2018	324
2019	298
2020	288
2021	276
Thereafter	2,359
Total	<u>\$ 3,961</u>

5. Commitments and Contingencies

Operating Leases

The Company entered into an operating lease agreement in May 2010 for its San Jose headquarters that was subsequently modified in November 2013, which extended the term of the lease for a period of approximately one hundred thirty-nine (139) months from the date of the modified agreement and provided the Company with four months of free rent. In addition, the Company received a tenant improvement allowance of \$1.0 million in the aggregate that was paid to the Company in equal installments over the course of the ten months after the date of the modified agreement to be used for the modification, refurbishment, construction or installation of improvements to the facility. On May 6, 2015, the lease was further amended (second amendment) to reflect building's new ownership and an adjustment in rent schedules, in which case the monthly rent payments were reduced by \$49,000 each month from July 2015 to October 2015 and were then increased by the same amount from November 2015 to February 2016. The total rent payments under the lease, however, remain unchanged.

The following table presents rent expense included in the Consolidated Statement of Operations (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Rent expense	\$ 2,264	\$ 2,268	\$ 2,268

Future commitments and obligations under this operating lease to be satisfied as they become due over the term are as follows (in thousands):

The years ending December 31,	
2017	2,399
2018	2,459
2019	2,521
2020	2,584
2021	2,648
Thereafter	9,804
Total	<u>\$ 22,415</u>

During 2016, the Company made payments in the amount of \$2.4 million related to this operating lease. In December 2015, the company signed a sublease to lease out a portion of office space. The sublessee moved in during the second quarter of fiscal 2016. The term of the lease is for 3 years and rental payments from the sublessee are approximately \$0.3 million per annum.

Capital Leases

During the third quarter of 2016, the Company leased a Camco Furnace under a three year lease agreement which was accounted for as a capital lease under ASC 840-30; the underlying asset is included in lab equipment and machinery. The current portion of the capital lease obligations of \$23 thousand is included in accrued liabilities and the non-current portion of \$39 thousand is included in other long-term liabilities in the accompanying Condensed Consolidated Balance Sheets as of December 31, 2016. The capital lease is discounted using an annual rate of 16.7%. The lease agreement requires annual payments of \$31 thousand, contains a cancellation option after 12 months and automatically transfers ownership of the property to the Company, the lessee, at the end of the lease term.

Depreciation expense of the Camco Furnace recorded under the capital lease obligations was \$8 thousand for fiscal 2016, compared to none for fiscal 2015.

Future commitments and obligations under this capital lease to be satisfied as they become due over the term are as follows (in thousands):

The years ending December 31,	
2017	31
2018	31
2019	13
Total	<u>\$ 75</u>

Silicon Valley Bank Loan Agreement

During 2013, the Company entered into a loan agreement (Loan Agreement) with SVB in the amount of \$25.0 million with interest at a fixed rate equal to 3.25%. The Loan Agreement had a financial covenant that required the Company to maintain a certain level of liquidity, and, as of December 31, 2014, the Company was compliant with the terms of that loan covenant. The term loan was to mature on November 30, 2016 and the Company was obligated to pay all outstanding principal and accrued and unpaid interest on that date. In August 2015, the Company repaid all remaining principal and accrued interest in the amount of \$21.6 million.

The following table presents payments made during the years ended December 31, 2016 and 2015 for interest owed under the terms of the Loan Agreement (in thousands):

	Year Ended December 31, 2016		
	Principal	Interest	Total
SVB payments	\$ —	\$ —	\$ —

	Year Ended December 31, 2015		
	Principal	Interest	Total
SVB payments	\$ 23,000	\$ 652	\$ 23,652

Litigation

The Company is subject to various claims arising in the ordinary course of business. Although no assurance may be given, the Company believes that it is not presently a party to any litigation of which the outcome, if determined adversely, would individually or in the aggregate be reasonably expected to have a material adverse effect on the business, operating results, cash flows or financial position of the Company.

Third parties and others may claim in the future that the Company has infringed their past, current or future intellectual property rights. These claims, whether meritorious or not, could be time-consuming, result in costly litigation, require expensive changes in the Company's methods of doing business or require the Company to enter into costly royalty or licensing agreements, if available. As a result, these claims could harm the Company's business, operating results, cash flows and financial position.

6. Warrants

Common Stock Warrants

During the year ended December 31, 2008, the Company issued warrants to purchase 90,000 shares of common stock for consulting services with an exercise price of \$2.04 per share and a ten year term. These warrants vested over four years. These warrants expired without exercise during the year ended December 31, 2015. During the year ended December 31, 2015, the expense related to the issuances and vesting of these warrants was insignificant.

7. Stock-Based Compensation

During the year ended December 31, 2011, the board of directors approved the 2011 Equity Incentive Plan (2011 Plan). A total of 4,225,648 shares of common stock were reserved for future issuance under the 2011 Plan, which became effective on November 17, 2011. The Company has a 2004 Equity Incentive Plan (2004 Plan), but no longer grants stock options under this plan. Canceled or forfeited stock option grants under the 2004 Plan will be added to the total amount of shares available for grant under the 2011 Plan. In addition, shares authorized but unissued as of November 17, 2011 under the 2004 Plan were added to shares available for grant under the 2011 Plan. The 2011 Plan contains an "evergreen" provision, pursuant to which the number of shares available for issuance under the 2011 Plan may be increased on the first day of the fiscal year, in an amount equal to the least of (a) 2,535,389 shares, (b) 4.5% of the outstanding Shares on the last day of the immediately preceding fiscal year or (c) such number of shares determined by the board of directors. During 2016 the Company registered an additional 2,209,152 shares under its 2011 Plan.

The 2011 Plan allows the Company to award stock options (incentive and non-qualified), restricted stock, restricted stock units, stock appreciation rights, deferred stock awards, dividend equivalents, performance awards, stock payments, performance shares and other incentive awards, or any combination thereof to employees, officers, directors and consultants of the Company. The exercise price of incentive stock options, which may only be granted to employees, granted under the 2011 Plan to participants with less than 10% voting power of all classes of stock of the Company or any parent or subsidiary company may not be less than 100% of the fair market value of the Company's common stock on the date of the grant. The exercise price of incentive stock options granted under the 2011 Plan to participants with 10% or more voting power of all classes of stock of the Company or any parent or subsidiary company may not be less than 110% of the fair market value of the Company's common stock on the date of the grant. Options granted under the 2011 Plan generally expire ten years from the date of grant and are generally exercisable at any time after the date of grant when the shares are vested. Incentive and nonstatutory stock options granted generally vest at a rate of 25% on the first anniversary of the commencement or grant date and 1/48th each month thereafter. Incentive stock options granted to participants with 10% or more of the voting power of all classes of the Company's common stock on the date of grant have a maximum term of five years from the date of grant.

During 2014, the Company granted \$1.3 million of options with two year vesting, with 50% vesting on the first anniversary of the vesting commencement date and the remaining shares vesting monthly such that all shares are vested on the second anniversary of the vesting commencement date.

Option activity for the periods presented is as follows:

	Options Outstanding			
	Number of Stock Options Outstanding	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value (in thousands)
Balance as of December 31, 2013	6,468,743	\$ 4.96	6.7	\$ 8,991
Granted	6,086,984	2.43		
Exercised	(593,173)	2.00		
Cancelled	(1,481,663)	6.75		
Balance as of December 31, 2014	10,480,891	3.25	7.4	1,073
Granted	4,069,813	1.84		
Exercised	(1,126,788)	1.30		
Cancelled	(2,111,698)	3.82		
Balance as of December 31, 2015	11,312,218	2.83	8.0	2,450
Granted	2,450,500	1.34		
Exercised	(369,173)	1.69		
Cancelled	(3,344,945)	2.50		
Balance as of December 31, 2016	10,048,600	\$ 2.04	7.2	\$ 15
Exercisable as of December 31, 2016	5,990,641	\$ 2.31	6.4	\$ —
Vested and expected to vest as of December 31, 2016	9,284,080	\$ 2.08	6.8	\$ 11

Restricted stock award and restricted stock unit (RSUs) activity for the periods presented is as follows:

	Number of Stock RSUs Outstanding	Weighted-Average Grant Date Fair Value
Balance as of December 31, 2013	884,101	\$ 7.69
Granted	1,485,488	2.75
Vested	(285,270)	—
Forfeited	(466,768)	5.83
Balance as of December 31, 2014	1,617,551	3.79
Granted	40,000	1.66
Vested	(917,926)	—
Forfeited	(375,783)	4.55
Balance as of December 31, 2015	363,842	4.72
Granted	200,000	0.99
Vested	(139,747)	5.32
Forfeited	(71,682)	5.13
Balance as of December 31, 2016	352,413	\$ 2.44
Vested and expected to vest as of December 31, 2016	218,838	

Typically, vesting of RSUs occurs over four years and is subject to the employee's continuing service to the Company. During 2014, the Company granted \$1.0 million of RSUs with a one year vesting period and subject to the employee's continuing service to the Company. The aggregate intrinsic value of RSUs outstanding at December 31, 2016 and 2015 was \$0.3 million and \$0.8 million, respectively.

RSUs that vested during 2016 and 2015 had fair values of \$0.3 million and \$2.8 million as of the vesting date, respectively.

The following table presents details on grants made by the Company for the following periods:

	Years Ended December 31, 2016		Years Ended December 31, 2015	
	Shares Granted	Weighted- Average Grant Date Fair Value	Shares Granted	Weighted- Average Grant Date Fair Value
Stock options	2,450,500	\$ 1.34	4,069,813	\$ 1.84
RSUs	200,000	\$ 0.99	40,000	\$ 1.66

As of December 31, 2016 and December 31, 2015, the Company had reserved shares of common stock for issuance as follows:

	As of December 31, 2016	As of December 31, 2015
Number of stock options outstanding	10,048,607	11,312,218
Number of RSUs outstanding	323,663	258,878
Shares available for future grant	5,163,386	2,960,442
Total shares reserved	15,535,656	14,531,538

The Company recognized stock-based compensation expense for awards granted to its employees and nonemployees as follows (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Cost of revenue	\$ 510	\$ 1,114	\$ 1,315
Research and development	949	1,668	1,234
Sales and marketing	527	651	1,470
General and administrative	1,641	2,240	2,002
Total stock-based compensation	\$ 3,627	\$ 5,673	\$ 6,021

The following table presents stock-based compensation expense, net of estimated forfeitures, by grant type (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Stock options	\$ 3,108	\$ 4,283	\$ 3,631
Restricted stock awards and restricted stock units (RSUs)	519	1,390	2,390
Total stock-based compensation	\$ 3,627	\$ 5,673	\$ 6,021

The following table presents unrecognized compensation expense, net of estimated forfeitures, related to the Company's equity compensation plans as of December 31, 2016, which is expected to be recognized over the following weighted-average periods, (in thousands, except for weighted-average period):

	Unrecognized Compensation Expense	Weighted- Average Period (in years)
Stock options	\$ 2,716	2.7
RSUs	\$ 344	2.6

There were no capitalized stock-based compensation costs or recognized stock-based compensation tax benefits during the years ended December 31, 2016 and 2015.

Additional information regarding options outstanding as of December 31, 2016, is as follows:

Range of Exercise Prices	Options Outstanding			Options Exercisable	
	Options Outstanding	Weighted-Average Remaining Contractual Life (Years)	Weighted-Average Exercise Price per Share	Exercisable	Weighted-Average Exercise Price per Share
\$0.00 to \$1.50	1,937,176	9.71	\$ 1.17	47,851	\$ 0.99
\$1.51 to \$3.00	7,583,973	6.34	1.99	5,463,464	2.01
\$3.01 to \$4.50	74,763	2.75	3.49	70,388	3.47
\$4.51 to \$6.00	210,000	6.85	5.56	166,250	5.56
\$6.01 to \$7.50	182,188	4.59	6.32	182,188	6.32
\$7.51 to \$9.00	50,000	6.41	8.21	50,000	8.21
\$9.01 to \$10.50	3,000	6.07	9.46	3,000	9.46
\$10.51 to \$12.00	7,500	4.65	11.96	7,500	11.96
	<u>10,048,600</u>	7.18	\$ 2.04	<u>5,990,641</u>	\$ 2.31

Determining Fair Value of Stock Options

Stock-based compensation cost is measured at the grant date based on the fair value of the award. We are required to estimate forfeitures at the time of grant and revise those estimates in subsequent periods if actual forfeitures differ from those estimates. We use historical data to estimate forfeitures and record stock-based compensation expense only for those awards that are expected to vest.

Valuation Method — The Company estimates the fair value of its stock options using the Black-Scholes option-pricing model.

Expected Term — The expected term represents the period that the stock-based awards are expected to be outstanding. For option grants that are considered to be "plain vanilla," the Company used the simplified method to determine the expected term as provided by the Securities and Exchange Commission. The simplified method calculates the expected term as the average of the time-to-vesting and the contractual life of the options.

Expected Volatility — The expected volatility is derived from the Company's weighted historical volatility following its IPO in November 2011.

Risk-Free Interest Rate — The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant for zero coupon U.S. Treasury notes with maturities approximately equal to the expected term of the options.

Expected Dividend — The expected dividend has been zero as the Company has never paid dividends and does not expect to pay dividends.

Summary of Assumptions — The fair value of the employee stock options were estimated on the grant dates using a Black-Scholes option-pricing model with the following weighted average assumptions:

	Years Ended December 31,		
	2016	2015	2014
Expected term (in years)	6.0	5.9	5.9
Risk-free interest rate	1.3%	1.6%	1.8%
Expected volatility	54%	50%	56%
Expected dividend rate	—%	—%	—%

8. Net Loss per Share of Common Stock

The following outstanding shares of common stock equivalents were excluded from the computation of diluted net loss per share of common stock for the periods presented because including them would have been antidilutive:

	Years Ended December 31,		
	2016	2015	2014
Stock options to purchase common stock	10,048,607	11,312,218	10,480,891
RSUs	323,663	258,878	897,231
Common stock warrants	—	—	90,000

9. Income Taxes

The Company follows FASB ASC 740, *Income Taxes*, for the computation and presentation of its tax provision. For the year ended December 31, 2016, the income tax provision of \$7,000 represents a provision for income taxes of \$6,000 related to foreign income taxes and state minimum income taxes of \$1,000.

The provision for annual income taxes consisted of the following (in thousands):

	As of December 31,		
	2016	2015	2014
U.S. Federal	\$ —	\$ —	\$ —
State	1	1	1
Foreign	6	11	6
Total current	\$ 7	\$ 12	\$ 7
Deferred:			
U.S. Federal	\$ —	\$ (4)	\$ —
State	—	—	—
Foreign	—	—	—
Total deferred	\$ —	\$ (4)	\$ —
Total provision for income taxes	\$ 7	\$ 8	\$ 7

The reconciliation of federal statutory income tax to the Company's provision for income taxes is as follows (in thousands):

	As of December 31,		
	2016	2015	2014
Expected provision at statutory federal rate	\$ (5,400)	\$ (7,134)	\$ (7,741)
State tax—net of federal benefit	1	1	1
U.S. federal research credit	(843)	(924)	(1,125)
Non deductible expenses	66	119	104
Others	(9)	8	8
Change in valuation allowance	6,192	7,938	8,760
Provision for income taxes	\$ 7	\$ 8	\$ 7

As of December 31, 2016, the Company's foreign subsidiaries had accumulated approximately \$0.4 million of earnings that have been reinvested in their operations. The Company has not provided U.S. tax on these earnings as the reinvestment is considered permanent in duration.

Deferred income taxes reflect the net tax effects of 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 the Company's deferred tax assets and liabilities are as follows (in thousands):

	As of December 31,	
	2016	2015
Deferred tax assets:		
Net operating loss federal and state	\$ 36,594	\$ 30,836
Research and foreign tax credits	13,783	12,307
Accrued compensation and vacation	430	411
Deferred revenue, other accruals and reserves	2,964	3,918
Stock-based compensation	4,727	4,319
Patents	2,065	2,884
Property and equipment	1,203	—
Gross deferred tax assets	\$ 61,766	\$ 54,675
Valuation allowance	\$ (61,766)	\$ (54,420)
Total deferred tax asset	\$ —	\$ 255
Deferred tax liabilities:		
Property and equipment	\$ —	\$ 255
Total deferred tax liabilities	\$ —	\$ 255
Net deferred tax assets	\$ —	\$ —

The Company established valuation allowances for U.S. federal and state deferred tax assets. The valuation allowances require an assessment of both positive and negative evidence when determining whether it is more likely than not that deferred tax assets are recoverable. Such assessment is required on a jurisdiction by jurisdiction basis. During the year ended December 31, 2016, the Company continued to maintain the valuation allowances for U.S. federal and state deferred tax assets. The Company intends to maintain a full valuation allowance until sufficient positive evidence exists to support reversal. The valuation allowance for deferred tax assets was \$61.8 million and \$54.4 million as of December 31, 2016 and 2015, respectively. The increase in the valuation allowance during the years ended December 31, 2016 and 2015 was \$7.4 million and \$9.4 million, respectively.

As of December 31, 2016, the Company has net operating loss carryforwards for U.S. federal and state income tax purposes of approximately \$105.5 million and \$96.6 million, respectively. Of these amounts, \$14.6 million and \$13.6 million, respectively, represent federal and state tax deductions from stock-based compensation which will be recorded as an adjustment to additional paid-in capital when they reduce taxes payable. The U.S. federal net operating loss carryforwards will start to expire in 2026 while for state purposes, the net operating losses will begin to expire in 2018. Utilization of the Company's net operating loss carryforwards and tax credits may be subject to substantial annual limitation due to the ownership change limitations provided by the Internal Revenue Code and similar state provisions. Such an annual limitation could result in the expiration of the net operating loss before utilization. The Company has not determined whether an ownership change has occurred.

In addition, the Company has \$10.0 million U.S. federal R&D credit and \$11.1 million California R&D credit carryforwards to offset future income tax liabilities. U.S. federal R&D tax credits can be carried forward for 20 years and will start to expire in 2026. California R&D credits can be carried forward indefinitely.

Uncertain Tax Positions

For the year ended December 31, 2016, the total amount of unrecognized tax benefits excluding interest thereon was \$4.2 million, none of which would impact the effective tax rate if realized during the year. The Company has not accrued interest and penalties related to the unrecognized tax benefits reflected in the financial statements for the years ended December 31, 2016, 2015 and 2014. Although the timing and outcome of income tax audits is highly uncertain, unrecognized tax benefits are not expected to decrease in the next twelve months.

The following table summarizes the activity related to unrecognized tax benefits (in thousands):

	As of December 31,		
	2016	2015	2014
Unrecognized benefit—beginning of period	\$ 3,757	\$ 3,261	\$ 2,656
Gross increase—prior period tax positions	—	—	—
Gross decreases—prior period tax positions	—	—	—
Gross increases—current period tax positions	455	496	605
Unrecognized benefit—end of period	<u>\$ 4,212</u>	<u>\$ 3,757</u>	<u>\$ 3,261</u>

The Company's U.S. federal, state and local and foreign income tax returns are subject to audit by relevant tax authorities. The Company's income tax reporting periods beginning with tax year ended December 31, 2013 for the U.S., and tax year ended December 31, 2012 for the Company's major state and local jurisdictions remain generally open to audit by relevant tax authorities.

10. Related Party Transactions

In March 2013, the Company amended the agreement that it had entered into in March 2010 with a related party and that it and the related party had amended in March 2012. Under the amended agreement, the two companies agreed to work together to conduct research and development and other activities. The development program between the parties ended during the year ended December 31, 2014, although certain licensing and royalty elements continued. The other party and the Company each had an independent board member that served on both companies' boards of directors and the independent board member was also a managing member of a significant shareholder of the Company as of December 31, 2015. In May 2016, this related party was acquired by and fully merged into another company. As a result, the acquiree's board of directors was fully dissolved; consequently the Company no longer considers the acquired company a related party as of December 31, 2016.

In November 2006, the Company entered into an Alliance Agreement with a related party that was a beneficial owner of more than 5% of the Company's common stock at the time. As of December 31, 2015, this related party owned less than 5% of the Company's common stock. During the third quarter of 2016, this related party sold all its holdings of the Company's stock. Since November 2006, the agreement has been amended numerous times with the last amendment signed in December 2013. The other party and the Company each have an independent board member that serves on both companies' boards of directors. As of December 31, 2016 and December 31, 2015, the Company had no accounts receivable or deferred revenue balance in either period with respect to its related party relationships.

The following table presents related party revenue included in the Consolidated Statement of Operations (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Related party revenue	\$ 2,008	\$ 3,314	\$ 5,594
Related party cost of revenue	\$ 131	\$ —	\$ —

At the annual stockholders meeting in May 2016, a new member was elected to the board of directors of the Company. This independent board member is a managing partner of an investment firm which holds a significant ownership position of the Company. As of December 31, 2016, the investment firm was a beneficial owner of approximately 29% of the Company's common stock. The Company incurred a director fees expense of \$26 thousand to the investment firm for fiscal 2016.

11. Information about Geographic Areas

Revenue

Revenue by geography is based on the billing address of the customer. The following table sets forth revenue by geographic area (in thousands):

	Years Ended December 31,		
	2016	2015	2014
United States	\$ 21,728	\$ 28,327	\$ 42,350
Japan	313	2,848	2,726
Asia-Pacific ex Japan	23,830	13,074	1,781
Europe and Middle East	1,427	1,073	838
Total	<u>\$ 47,298</u>	<u>\$ 45,322</u>	<u>\$ 47,695</u>

Long-Lived Assets

Substantially all of the Company's long-lived assets are located in the U.S. An insignificant amount of long-lived assets reside in the Company's foreign subsidiaries and branches in Hong Kong, Japan and Taiwan.

12. Restructuring Charges

In September 2016, the Company initiated a reduction in force to improve its cost structure and align spending with continuing operations plans. The reduction in force constituted approximately 13% of the Company's global workforce. As a result of the reduction in force, the Company recorded expenses related to employee severance and termination benefits of approximately \$1.1 million, which was recognized in fiscal 2016. All such related expenses are recorded within "Restructuring charges" on the Consolidated Statements of Operations, and related accruals are included in accrued liabilities and accrued compensation and employee benefits on the Consolidated Balance Sheets. The restructuring charges were substantially complete before December 31, 2016. The following table presents severance and related expenses and payments (in thousands) as of December 31, 2016:

	As of December 31, 2015	Charges	Cash Payments	Adjustments	As of December 31, 2016
Severance and related expenses	\$ —	\$ 1,120	\$ (1,102)	\$ (6)	\$ 12

During each of February and May 2014, the Company initiated reductions in force as part of an overall plan to reduce the Company's cost structure. The reductions in force constituted approximately 18% of the Company's workforce in February 2014 and 10% in May 2014. As a result of the reductions in force, the Company recorded expenses related to employee severance and termination benefits of approximately \$1.4 million, which was recognized and paid during the year ended December 31, 2014.

13. Subsequent Event

The Company has evaluated events up to the filing date of the Form 10-K and determined that no subsequent event activity required disclosure.

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 Chief Financial Officer, evaluated the effectiveness of the design and operation of our disclosure controls and procedures, as such term is defined in Rule 13a-15(e) promulgated under the Securities Exchange Act of 1934, as amended, as of December 31, 2016.

The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), means controls and other procedures that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is (i) recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms and (ii) accumulated and communicated to our management, including the Chief Executive Officer and Chief Financial Officer, as the principal executive and financial officers, respectively, to allow timely decisions regarding required disclosures.

Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective 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 Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our 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.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an assessment of the effectiveness of our internal control over financial reporting as of December 31, 2016. In making this assessment, management used the criteria set forth in the framework established by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) entitled *Internal Control-Integrated Framework (2013)*. Based on our assessment, management concluded that, as of December 31, 2016, our internal control over financial reporting was effective based on these criteria.

The effectiveness of our internal control over financial reporting as of December 31, 2016 has been audited by Armanino LLP, an independent registered public accounting firm, as stated in their report, which appears under Item 8 of this annual report on Form 10-K.

Changes in Internal Control over Financial Reporting

We made no changes to our internal control over financial reporting during the quarterly period ended December 31, 2016 that has materially affected, or that is reasonably likely to materially affect, our internal control over financial reporting, except for the continuation of the remedial efforts as described below to address the material weaknesses described in our Annual Report on Form 10-K for the year ended December 31, 2015.

Remedial Efforts to Address the Material Weaknesses

Following the identification of the material weaknesses described in our Annual Report on Form 10-K for the year ended December 31, 2015, we initiated remediation measures to address the material weakness over insufficient qualified personnel, which included creating and filling a new accounting position and hiring an outside

consultant to assist us in reviewing and updating our policies and procedures, as appropriate. Since December 31, 2015, we have continued to improve our training for all of the key positions in our financial reporting and accounting function and our documentation of accounting policies and procedures. Based on the implementation work and results obtained as of December 31, 2016, we have completed the processes in remediating the material weaknesses noted in our Form 10-K filed for the year ended December 31, 2015.

Inherent Limitations on Effectiveness of Controls

Our management, including our Chief Executive Officer and our Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of internal control will be met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of the controls must be considered relative to their costs. While our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of their effectiveness, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, will be detected. These inherent limitations include the realities that judgments in decision making can be faulty and that breakdowns can occur because of simple errors or mistakes. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people or by management override of the controls. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and may not be detected. 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.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item concerning our directors, executive officers, compliance with Section 16 of the Exchange Act, our code of ethics and Nominating and Corporate Governance Committee and Audit Committee is incorporated by reference to the information set forth in the sections under the headings "*Election of Directors*," "*Executive Officers*," "*Section 16(a) Beneficial Ownership Reporting Compliance*" and "*Board of Directors, Corporate Governance and Related Matters*" in our Definitive Proxy Statement to be filed with the Securities and Exchange Commission in connection with our 2017 Annual Meeting of Stockholders (the 2017 Proxy Statement).

We have adopted a Code of Business Conduct and Ethics that applies to all of our directors, officers and employees (the "Code of Ethics"). The Code of Ethics is available at the Investors/Governance/Governance Documents section of our website at www.intermolecular.com. A copy of the Code of Ethics is available in print, free of charge, to stockholders upon request to us at the address set forth in Item 1 of this Annual Report on Form 10-K. We intend to satisfy the disclosure requirements under the Securities and Exchange Act of 1934, as amended, regarding an amendment to or waiver from a provision of our Code of Ethics by posting such information on our web site.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item concerning executive compensation is incorporated by reference to the information in the 2017 Proxy Statement under the headings "*Executive Compensation*," "*Board of Directors, Corporate Governance and Related Matters*" and "*Executive Compensation—Compensation Committee Report*."

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

The information required by this item concerning securities authorized for issuance under equity compensation plans and security ownership of certain beneficial owners and management is incorporated by reference to the information in the 2017 Proxy Statement under the headings "*Executive Compensation—Equity Compensation Plan Information*" and "*Security Ownership of Directors and Executive Officers and Certain Beneficial Owners*."

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

The information required by this item concerning transactions with related persons and director independence is incorporated by reference to the information in the 2017 Proxy Statement under the subheadings "*Director Independence*," "*Transactions with Related Persons*" and "*Related Person Transaction Policy*" under the heading "*Board of Directors, Corporate Governance and Related Matters*."

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this item is incorporated by reference from the information in the 2017 Proxy Statement under the headings "*Audit-related Matters*" and "*Ratification of the Appointment of the Independent Registered Public Accounting Firm*."

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

The following documents are filed as part of this report:

1. Financial Statements: See "Index to Consolidated Financial Statements" in Part II, Item 8 of this Form 10-K
2. All schedules are omitted because either they are not required information, or the required information is in the financial statements or notes thereto.
3. Exhibits: The exhibits listed in the accompanying index to exhibits are filed or incorporated by reference as part of this Form 10-K.

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, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Date: March 3, 2017

INTERMOLECULAR, INC.
By: /s/ CHRISTIAN F. KRAMER
Christian F. Kramer
President and Chief Executive Officer

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

Signature	Title	Date
<u>/s/ BRUCE M. McWILLIAMS</u> Bruce M. McWilliams	Executive Chairman of the Board of Directors	March 3, 2017
<u>/s/ CHRISTIAN F. KRAMER</u> Christian F. Kramer	President and Chief Executive Officer (Principal Executive Officer), Director	March 3, 2017
<u>/s/ C. RICHARD NEELY, JR.</u> C. Richard Neely, Jr.	Chief Financial Officer (Principal Financial and Accounting Officer)	March 3, 2017
<u>/s/ MARVIN D. BURKETT</u> Marvin D. Burkett	Director	March 3, 2017
<u>/s/ IRWIN FEDERMAN</u> Irwin Federman	Director	March 3, 2017
<u>/s/ GEORGE M. SCALISE</u> George M. Scalise	Director	March 3, 2017
<u>/s/ KENNETH H. TRAUB</u> Kenneth H. Traub	Director	March 3, 2017

EXHIBITS

Exhibit Number	Exhibit Exhibit Description	Incorporated By Reference			Filed Herewith
		Form	Date	Number	
2.1	Asset Purchase Agreement by and between Intermolecular, Inc. and Symyx Technologies, Inc. dated as of July 28, 2011.(1)	S-1/A	9/9/2011	2.1	
3.1	Amended and Restated Certificate of Incorporation of Intermolecular, Inc.	10-K	03/16/2012	3.1	
3.2	Amended and Restated Bylaws of Intermolecular, Inc.	10-K	03/16/2012	3.2	
4.1	Specimen Common Stock Certificate.	S-1/A	11/7/2011	4.1	
4.2	Warrant to purchase shares of common stock issued to Timane S.a.r.l. dated June 20, 2008.	S-1	7/29/2011	4.2	
4.3	Fourth Amended and Restated Investor Rights Agreement dated as of March 4, 2011, by and among Intermolecular, Inc. and certain stockholders named therein, as amended by Amendment No. 1 to Fourth Amended and Restated Investor Rights Agreement dated as of June 14, 2011.	S-1	7/29/2011	10.1	
10.1 †	Collaborative Development Program Agreement by and among SanDisk Corporation, Toshiba Corporation and Intermolecular, Inc. dated March 15, 2010.	S-1/A	11/7/2011	10.3	
10.2 †	Alliance Agreement by and between Intermolecular, Inc. and Advanced Technology Materials, Inc. dated as of November 17, 2006.	S-1/A	10/26/2011	10.4	
10.3 †	Wets Workflow Purchase Agreement by and between Intermolecular, Inc. and Advanced Technology Materials, Inc. dated as of July 13, 2007, as amended by the Addendum to Wets Workflow Purchase Agreement dated as of December 21, 2007, the Amendment to Addendum to Wets Workflow Purchase Agreement dated as of December 16, 2008 and the Supplemental Agreement to the Amendment to the Addendum to Wets Workflow Purchase Agreement dated as of March 16, 2009.	S-1/A	11/7/2011	10.5	
10.4 †	Dry Workflow Purchase Agreement by and between Intermolecular, Inc. and Advanced Technology Materials, Inc. dated as of December 16, 2008.	S-1/A	10/26/2011	10.6	
10.5 †	Modification to the Wets Workflow Purchase Agreement and Dry Workflow Purchase Agreement by and between Intermolecular, Inc. and Advanced Technology Materials, Inc. dated as of August 27, 2010.	S-1/A	9/30/2011	10.7	
10.6 †	Amendment Number 5 to the Wets Workflow Purchase Agreement and Dry Workflow Purchase Agreement by and between Intermolecular, Inc. and Advanced Technology Materials, Inc. dated as of March 3, 2011.	S-1/A	9/30/2011	10.8	

Exhibit Number	Exhibit Exhibit Description	Incorporated By Reference			Filed Herewith
		Form	Date	Number	
10.7 †	CDP Services Addendum to Dry Workflow Purchase Agreement by and between Intermolecular, Inc. and Advanced Technology Materials, Inc. dated as of October 1, 2011, Amendment Number 6 to the Wets Workflow Purchase Agreement and Dry Workflow Purchase Agreement by and between Intermolecular, Inc. and Advanced Technology Materials, Inc. dated as of October 27, 2011, and Amendment Number 7 to the Wets Workflow Purchase Agreement and Dry Workflow Purchase Agreement by and between Intermolecular, Inc. and Advanced Technology Materials, Inc. dated as of October 27, 2011.	10-K	03/16/2012	10.8	
10.8	Form of Indemnification Agreement between Intermolecular, Inc. and each of its directors, officers and certain employees.	S-1/A	11/7/2011	10.12	
10.9a+	Intermolecular, Inc. 2004 Equity Incentive Plan, as amended.	S-1	7/29/2011	10.13a	
10.9b+	Form of Early Exercise Stock Option Agreement under the 2004 Equity Incentive Plan.	S-1	7/29/2011	10.13b	
10.9c+	Form of Stock Option Agreement under the 2004 Equity Incentive Plan.	S-1	7/29/2011	10.13c	
10.10a+	Intermolecular, Inc. 2011 Incentive Award Plan.	S-1/A	11/7/2011	10.14a	
10.10b+	Form of Stock Option Grant Notice and Stock Option Agreement under the 2011 Incentive Award Plan.	S-1/A	11/7/2011	10.14b	
10.10c+	Form of Restricted Stock Award Grant Notice and Restricted Stock Award Agreement under the 2011 Incentive Award Plan.	S-1/A	11/7/2011	10.14c	
10.10d+	Form of Restricted Stock Unit Award Grant Notice and Restricted Stock Unit Award Agreement under the 2011 Incentive Award Plan.	S-1/A	11/7/2011	10.14d	
10.11a+	Form of Change in Control Severance Agreement between the Company and certain of its executive officers.	S-1/A	11/7/2011	10.15a	
10.11b+	Amendment to Intermolecular, Inc. Change in Control Severance Agreement Scot A. Griffin.	10-Q	8/6/2015	10.14c	
10.11c+	Form of Change in Control and Severance Agreement.	10-Q	8/6/2015	10.14d	
10.11d+	Change in Control and Severance Agreement between Intermolecular, Inc. and Christian Kramer.	10-Q	11/2/2016	10.11d	
10.12 †	Amendment dated March 28, 2012 to the Collaborative Development Agreement by and among SanDisk Corporation, Toshiba Corporation and Intermolecular, Inc. dated March 15, 2010.	10-Q	05/08/2012	10.1	

Exhibit Number	Exhibit Exhibit Description	Incorporated By Reference			Filed Herewith
		Form	Date	Number	
10.13 †	Research Agreement by and among Guardian Industries Corp. and Intermolecular, Inc. dated as of February 8, 2010 (the “Sol-Gel Agreement”), incorporating Task Order #1 effective as of February 8, 2010, Task Order #1.1 effective as of July 22, 2010, Task Order #2 effective as of October 22, 2010 and Task Order #3 effective as of May 1, 2011, as amended on November 1, 2011. Research Agreement by and among Guardian Industries Corp. and Intermolecular, Inc. dated as of July 15, 2010 (the “Master Agreement”), incorporating Task Order #1 effective as of July 22, 2010 and Task Order #2 effective as of November 30, 2010. Amendment Number One to Sol-Gel Agreement and Master Agreement effective as of January 1, 2012.	10-Q	05/08/2012	10.2	
10.14 †	First Fee Triggering Technology Agreement by and between Elpida Memory, Inc. and Intermolecular, Inc. dated December 29, 2012.	10-K	03/04/2013	10.17	
10.15 †	Amendment No. 8 to the Wets Workflow Purchase Agreement and Dry Workflow Purchase Agreement by and between Advanced Technology Materials, Inc. and Intermolecular, Inc. dated as of December 31, 2012.	10-K	03/04/2013	10.18	
10.16 †	Second Addendum to Collaborative Development Program Agreement, dated March 27, 2013, by and among Toshiba Corporation, SanDisk Corporation and Intermolecular, Inc.	10-Q	05/02/2013	10.20	
10.18 †	Collaborative Development Agreement, effective April 1, 2013, by and between Micron Technology, Inc. and Intermolecular, Inc.	10-Q	08/07/2013	10.27	
10.19 †	Equipment Supply and Technology Licensing Agreement for the Dry Equipment effective September 29, 2013, by and between Ulyanovsk Center for Technology Transfer of the Russian Federation and Intermolecular Inc.	10-Q	11/07/2013	10.28	
10.20 †	Equipment Supply and Technology Licensing Agreement for the Wet Equipment effective September 29, 2013, by and between Ulyanovsk Center for Technology Transfer of the Russian Federation and Intermolecular Inc.	10-Q	11/07/2013	10.29	
10.21 †	Joint Development Program Agreement effective September 29, 2013, by and between Ulyanovsk Center for Technology Transfer of the Russian Federation and Intermolecular Inc.	10-Q	11/07/2013	10.30	
10.22	First amendment to the Lease Agreement between SBC&D Co. and Intermolecular, Inc., dated as of October 16, 2013.	10-Q	11/07/2013	10.31	

Exhibit Number	Exhibit Description	Incorporated By Reference			Filed Herewith
		Form	Date	Number	
10.23 †	Amendment Number 10 to the Wets Workflow Purchase Agreement and Dry Workflow Agreement between Advanced Technology Materials, Inc., and Intermolecular, Inc., dated December 30, 2013.	10-K	03/10/2014	10.32	
10.24 †	Amendment No. 2 to the Research Agreements between Guardian Industries and Intermolecular dated December 30, 2013.	10-K	03/10/2014	10.34	
10.25 †	Amendment No. 3 to the Research Agreements between Guardian Industries and Intermolecular dated February 6, 2014.	10-Q/A	10/03/2014	10.36	
10.26 †	Amendment No. 4 to the Research Agreements between Guardian Industries and Intermolecular dated October 30, 2014.	10-K	02/27/2015	10.37	
10.27 +	Employment Agreement, effective October 12, 2014, by and between Bruce McWilliams and Intermolecular, Inc.	10-K	02/27/2015	10.38	
10.28 +	Employment Agreement dated October 10, 2014, by and between Scot Griffin and Intermolecular, Inc.	10-K	02/27/2015	10.39	
10.29+	Employment Agreement by and between Intermolecular, Inc. and Christian Kramer.	10-Q	11/2/2016	10.29	
10.30+	Separation Agreement by and between Intermolecular, Inc. and Scot A. Griffin.	10-Q	11/2/2016	10.30	
10.31	Governance Agreement by and between Intermolecular, Inc. and Raging Capital Management, LLC.	8-K	11/16/2016	10.1	
16.1	Letter to Securities and Exchange Commission from KPMG LLP, dated April 1, 2016	8-K	04/01/2016	16.1	
23.1	Consent of Independent Registered Public Accounting Firm.				X
23.2	Consent of Independent Registered Public Accounting Firm.				X
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
32.1	Certification of Chief Executive Officer pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				X

Exhibit Number	Exhibit Exhibit Description	Incorporated By Reference			Filed Herewith
		Form	Date	Number	
32.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				X
101.INS	XBRL Instance Document				X
101.SCH	XBRL Taxonomy Extension Schema Document				X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document				X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document				X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document				X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document				X

+ Indicates a management contract or compensatory plan.

† Certain portions have been omitted pursuant to a confidential treatment request. Omitted information has been filed separately with the SEC.

(1) All exhibits, schedules and similar attachments to this exhibit have been omitted. Copies of such exhibits, schedules and similar attachments will be furnished supplementally to the SEC upon request.

Consent of Independent Registered Public Accounting Firm

The Board of Directors

Intermolecular, Inc.:

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-178154, 333-180169, 333-187017, 333-194464, 333-202369 and 333-210427) of Intermolecular, Inc. (the "Company") of our reports dated March 3, 2017 relating to the financial statements, financial statement schedule and the effectiveness of internal control over financial reporting of the Company for the year ended December 31, 2016, which reports appear in the Company's annual report on Form 10-K for the fiscal year ended December 31, 2016.

/s/ Armanino LLP

San Ramon, California

March 3, 2017

Consent of Independent Registered Public Accounting Firm

The Board of Directors

Intermolecular, Inc.:

We consent to the incorporation by reference in the registration statements (Nos. 333-178154, 333-180169, 333-187017, 333-194464, 333-202369, and 333-210427) on Form S-8 of Intermolecular, Inc. of our report dated March 28, 2016, with respect to the consolidated balance sheet of Intermolecular, Inc. as of December 31, 2015, and the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the years in the two-year period ended December 31, 2015, which report appears in the December 31, 2016 annual report on Form 10-K of Intermolecular, Inc.

/s/ KPMG LLP

Santa Clara, California

March 3, 2017

Certification of Chief Executive Officer

Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Christian F. Kramer, certify that:

1. I have reviewed this Annual Report on Form 10-K of Intermolecular, 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 3, 2017

/s/ Christian F. Kramer
Christian F. Kramer
President and Chief Executive Officer

Certification of Chief Financial Officer

Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, C. Richard Neely, Jr., certify that:

1. I have reviewed this Annual Report on Form 10-K of Intermolecular, 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 3, 2017

/s/ C. Richard Neely, Jr.
C. Richard Neely, Jr.
Chief Financial Officer

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

In connection with the Annual Report of Intermolecular, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2016, as filed with the Securities and Exchange Commission (the "Report"), Christian F. Kramer, President and Chief Executive Officer of the Company, does hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- The information in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 3, 2017

By: /s/ Christian F. Kramer

Name: Christian F. Kramer

Title: *President and Chief Executive Officer*

A signed original of this written statement required by Rule 13a-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933 or the Securities Exchange Act of 1934 (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.

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

In connection with the Annual Report of Intermolecular, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2016, as filed with the Securities and Exchange Commission (the "Report"), C. Richard Neely, Jr., Chief Financial Officer of the Company, does hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- The information in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 3, 2017

By: /s/ C. Richard Neely, Jr.

Name: C. Richard Neely, Jr.

Title: Chief Financial Officer

A signed original of this written statement required by Rule 13a-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933 or the Securities Exchange Act of 1934 (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.

