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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2017

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: 001-36030

Marrone Bio Innovations, Inc.
(Exact name of registrant as specified in its charter)

Delaware **(State or other jurisdiction of incorporation or organization)**	**20-5137161** **(I.R.S. Employer Identification No.)**

1540 Drew Avenue, Davis, California 95618
(Address of principal executive offices and zip code)

(530) 750-2800
(Registrant's telephone number, including area code)

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

Class	Exchange on which registered
Common Stock, $0.00001 par value	**Nasdaq Capital 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 [X]

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 [X]

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 [X] 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 (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes [X] No [ ]

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 or Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. [ ]

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

Large accelerated filer	[ ]		Accelerated filer	[ ]
Non-accelerated filer	[ ]	(Do not check if a smaller reporting company)	Smaller reporting company	[X]
Emerging growth company	[X]			

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

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

As of June 30, 2017, the last day of the registrant's most recently completed second quarter, the aggregate market value of the registrant's voting and non-voting common stock held by non-affiliates was $28,325,332 based upon the closing price of the common stock as reported on the Nasdaq Capital Market. This calculation excludes the shares of common stock held by each officer, director and holder of 5% or more of the outstanding common stock as of June 30, 2016. This calculation does not reflect a determination that such persons are affiliates for any other purposes.

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

Class	**Shares Outstanding at March 26, 2018**
Common Stock, $0.00001 par value	102,092,613

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for its 2017 Annual Meeting of Stockholders are incorporated by reference in Part III of this Annual Report on Form 10-K where indicated. Such proxy statement is expected to be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2017.

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Special Note Regarding Forward-Looking Statements and Trade Names

This Annual Report on Form 10-K includes a number of forward-looking statements that involve many risks and uncertainties. Forward-looking statements may be identified by the use of the words "would", "could", "will", "may", "expect", "believe", "should", "anticipate", "outlook", "if", "future", "intend", "plan", "estimate", "predict", "potential", "targets", "seek" or "continue" and similar words and phrases, including the negatives of these terms, or other variations of these terms, that denote future events. These forward-looking statements include: our plans to target our existing products or product variations for new markets and for new uses and applications; our plans and expectations with respect to growth in sales of our product lines and with respect to Bio-Tam 2.0 and Jet-Ag; our ability and plans to develop, register and commercialize additional new product candidates and bring new products to market across multiple categories faster and at a lower cost than other developers of pest management products, including research, development and field trial plans; our expectations regarding registering new products and new formulations and expanded use labels for existing products, including submitting new products to the EPA; our belief that challenges facing the use of conventional chemical pesticides will continue to grow; our beliefs regarding the growth of markets for, and unmet demand for, bio-based products; our beliefs regarding market adoption of our products and our ability to compete in our target markets; our intention to maintain existing, and develop new, supply, sales and distribution channels and extend market access; expectations regarding potential future payments under strategic collaboration and development agreements; our plans and expectations relating to our debt agreements; management's belief regarding our access to capital resources through equity offerings, debt financings, strategic collaborations or other means; our plans to grow our business while improving efficiency, including by focusing on a limited number of product candidates, taking measures to reduce expenses and expanding our sales and marketing team; our plans and expectations with respect to manufacturing and production; our plans to seek third-party collaborations to develop and commercialize more early stage product candidates; our intention to continue to devote significant resources toward our proprietary technology and research and development; our expectations that sales will be seasonal and the impact of continued drought and other weather-related conditions; our ability to protect our intellectual property in the United States and abroad; our beliefs regarding the effects of the outcome of certain legal matters; our anticipated impact of certain accounting pronouncements; our ability to use carryforwards; our expectations regarding market risk, including interest rate changes, foreign currency fluctuations and commodity price changes; our expectations with respect to future regulatory restrictions on competing products or product ingredients and our future expenditures, available cash and other financial and operating results. These statements reflect our current views with respect to future events and our potential financial performance and are subject to risks and uncertainties that could cause our actual results and financial position to differ materially and adversely from what is projected or implied in any forward-looking statements included in this Annual Report on Form 10-K. These factors include, but are not limited to, the risks described under Part I–Item 1A—"Risk Factors," Part II–Item 7—"Management's Discussion and Analysis of Financial Condition and Results of Operations," elsewhere in this Annual Report on Form 10-K and those discussed in other documents we file with the U.S. Securities and Exchange Commission ("SEC"). We make these forward-looking statements based upon information available on the date of this Annual Report on Form 10-K, and we have no obligation (and expressly disclaim any such obligation) to update or alter any forward-looking statements, whether as a result of new information or otherwise except as otherwise required by securities regulations.

As used herein, "MBI", the "Company", "we", "our" and similar terms refer to Marrone Bio Innovations, Inc., unless the context indicates otherwise.

Except as context otherwise requires, references in this Annual Report on Form 10-K to our product lines, such as Regalia, refer collectively to all formulations of the respective product line, such as Regalia Maxx, Regalia Rx or Regalia SC, and all trade names under which our distributors sell such product lines internationally, such as Sakalia TM, Sentry® or Milsana®. Our logos, Grandevo® , Regalia® , Venerate® , Zequanox® , Haven®, Majestene®, Zelto TM, Stargus TM, Amplitude TM and other trade names, trademarks or service marks of Marrone Bio Innovations, Inc. appearing herein are the property of Marrone Bio Innovations, Inc. This Annual Report on Form 10-K contains additional trade names, trademarks and service marks of other companies, such as Bio-Tam ® 2.0. We do not intend our use or display of other companies' trade names, trademarks or service marks to imply relationships with, or endorsement or sponsorship of us by, these other companies.

PART I

ITEM 1. BUSINESS

We make bio-based pest management and plant health products. Bio-based products are comprised of naturally occurring microorganisms, such as bacteria and fungi, and plant extracts. Our current products target the major markets that use conventional chemical pesticides, including certain agricultural and water markets, where our bio-based products are used as alternatives for, or mixed with, conventional chemical products. We also target new markets for which (i) there are no available conventional chemical pesticides or (ii) the use of conventional chemical pesticides may not be desirable or permissible either because of health and environmental concerns (including for organically certified crops) or because the development of pest resistance has reduced the efficacy of conventional chemical pesticides. Six of our seven product lines are approved by the United States Environmental Protection Agency ("EPA") and registered as "biopesticides." Our first non-EPA product is Haven, a plant health product that is a "biostimulant," which requires state registrations, but does not require EPA registration. We believe our current portfolio of products and our pipeline address the growing global demand for effective, efficient and environmentally responsible products to control pests, increase crop yields and reduce crop stress.

We primarily sell our products to the crop protection market. Our five commercially available crop protection product lines are Regalia, for controlling plant disease and increasing plant health, Grandevo and Venerate, each for insect and mite control, Majestene and its turf and ornamentals counterpart brand Zelto, for nematode control and Stargus and its row crop counterpart brand Amplitude, for downy mildew and white mold control. These products can be used in both conventional and organic crop production, and are primarily sold to growers of specialty crops such as grapes, citrus, tomatoes, vegetables, nuts, leafy greens and ornamental plants. We also have had some sales for large-acre row crops including Regalia for corn and soybeans and in January 2017, our strategic partner, Albaugh, LLC ("Albaugh"), began distributing their BIOST biological seed treatment platform, which includes the microbe in Venerate, for row crops including cotton, soybeans and corn. In March 2016, we also entered into an agreement with Isagro USA to distribute Bio-Tam 2.0 for soil-borne disease control and grapevine trunk disease control, which complements our existing products, particularly Regalia, and in May 2017, we entered into an agreement with Jet Harvest Solutions to distribute Jet-Ag biofungicide and disinfectant in certain regions of the U.S. In March 2017, we launched Haven, a plant health product that reduces plant stress in drought and intense sunlight. We believe that these existing crop protection and plant health products, or variations thereof, such as the Zelto brand we launched in January 2018, can also be specifically targeted for industrial and institutional, turf and ornamental, home and garden or animal health uses such as controlling grubs, ants, flies and mosquitoes in and around schools, parks, golf courses and other public-use areas.

In addition, we have developed Zequanox, a commercially available product line that we sell to the water treatment market. Zequanox selectively controls invasive mussels that cause significant infrastructure and ecological damage across a broad range of in-pipe and open-water applications, including hydroelectric and thermoelectric power generation, industrial applications and recreation. In November 2017, we signed an exclusive distribution agreement with Solenis. LLC, a large water treatment company, to distribute Zequanox for in-pipe treatments in the United States and Canada.

We continue to execute on our prioritization plan, which focuses our resources on improving and promoting our commercially available products, advancing product candidates that are expected to have the greatest impact on near-term growth potential and expanding our international presence and commercialization. We also continue to focus on finding ways to reduce expenses, conserve cash and improve operating efficiencies, to extract greater value from our products and product pipeline and to improve our communication to and connection with the global sustainability movement that is core to our cultural values.

In connection with this strategy, we are concentrating new headcount on sales and marketing, with increased focus on large growers in our top target crops, on-farm demonstrations, training and ability to educate and support our customers, while continuing to provide our product development staff with responsibility for technical sales support, field-trials and demonstrations to promote sales growth. For markets other than high-value specialty crops, such as row crops and seed treatments, we are seeking to expand our network of distribution partners, focusing on regional and national distributors operating in the United States, Canada and other countries that present a significant opportunity for near-term revenue generation. In addition, our research and development efforts are now focused on supporting existing commercial products with a focus on reducing cost of product revenues, further understanding the modes of action, manufacturing support and improving formulations. Accordingly, while we believe that we have developed a robust pipeline of novel product candidates, we are currently limiting our internal development efforts to two product candidates (having launched Haven and Stargus/Amplitude in 2017): MBI-014, a bioherbicide that is based on the same microorganism in Venerate and Majestene/Zelto, which we plan to submit to the EPA in 2018 and MBI-601 (Ennoble), a biopesticide that produces gaseous natural compounds that function as a "biofumigant," which was approved by the EPA in November 2016. Simultaneously, we are seeking collaborations with third parties to develop and commercialize more early stage candidates on which we have elected not to expend significant internal resources. We believe that, collectively, these measures will best position us to continue to respond to business challenges while remaining committed to our long-term, global vision.

Industry Overview

Pest management and plant health is an important global industry. Phillips McDougall, an independent advisory firm, estimates the 2016 world agrichemical market (crop protection) at the distributor level at $49.9 billion, falling 2.5% from 2015, with Asia first at $13.8 billion in sales, followed by Latin America at $13.1 billion, Europe at $11.4 billion, the NAFTA region at $9.5 billion and Europe, Middle East and Africa at $2.1 billion. The total agrichemical market including non-crop pesticides fell by 1.9% to $56.4 billion. The cost and time to bring one new chemical pesticide to market is estimated at over $280 million and an average of 11 years.

While industry estimates vary, our research shows that the global seed treatment market, which we entered in 2017 through our strategic partner Albaugh, was approximately $5 billion in 2017, and is projected to increase at a compound annual growth rate of approximately 8-10% over the next five years. Insecticides currently hold the largest share of this market and the crop protection category is expected to be the fastest growing segment over the next several years.

Most of the markets we currently target or plan to target primarily rely on conventional chemical pesticides, plant growth regulators and plant health products, supplemented in certain agricultural markets by the use of genetically modified crops. Generally, conventional chemical pesticides are synthetic materials that directly kill or inactivate pests. Some chemicals can also increase or regulate plant growth and have other plant health effects in absence of pests and plant diseases.

Demand for effective and environmentally responsible bio-based products continues to increase. The global market for biopesticides, which control pests by non-toxic mechanisms such as attracting pests to traps or interfering with their ability to digest food, was valued at $3.7 billion in 2015 and has been projected to grow to $7.7 billion in 2021, reflecting a 14.1% compound annual growth rate of over the period, according to BCC Research, an independent market research firm. DunhamTrimmer, a market research company, estimates the 2016 biocontrol (or pesticides) market at $3.2 billion, with a compound annual growth rate of more than 16% through 2020, compared to less than 6% compound annual growth rate for the conventional global crop protection (or synthetic pesticide) market. Similarly, the biostimulant market, which we entered in 2017 with Haven, is growing about 10-15% annually. We believe these trends will continue as the benefits of using bio-based pest management and plant health products become more widely known.

Crop Protection

Conventional Production. Growers are constantly challenged to supply the escalating global demand for food, while reducing the negative impact of crop protection practices on consumers, farm workers and the environment. The dominant technologies for crop protection are conventional chemical pesticides and genetically modified crops. Major agrichemical companies have invested billions of dollars to develop genetically modified crops that resist pests or have high tolerance to conventional chemical pesticides. The market for genetically modified crop seeds was estimated at $20.4 billion in 2016, up 3.1% from 2015, according to Phillips McDougall. In addition, according to the International Service for the Acquisition of Agri-biotech Applications, a third-party not-for-profit organization, in 2016, 185 million hectares (457 million acres) were planted with genetically modified crops in 28 countries, with the United States, Brazil, Argentina, Canada and India planting the most (in that order). Soybean, corn, cotton and canola plantings have made the greatest inroads.

Conventional chemical pesticides and genetically modified crops have historically been effective in controlling pests. However, there are increasing challenges facing the use of conventional chemical pesticides such as pest resistance and environmental, consumer and worker safety concerns. Governmental agencies are further pressuring growers, distributors and manufacturers by restricting or banning certain forms of conventional chemical pesticide usage, particularly in the European Union ("EU"), as some conventional chemical pesticide products have been phased out, as well as at local levels, where many city and county governments have prohibited the sale of certain conventional chemical pesticide products, magnifying the complexity of agrichemical companies' distribution and regulatory compliance. At the same time, a number of supermarket chains, food processors and key purchasers of specialty fruits, nuts and vegetables are imposing synthetic chemical residue restrictions, limiting options available to growers close to harvest. Consumers, scientists and environmental groups have also voiced concerns about the unintended effects of genetically modified crops, including pest resistance and contamination of non-genetically modified crops. In response to consumer and environmental group concerns and restrictions by importing countries, several large-scale food purchasers have demanded that their contracted growers supply them only non-genetically modified crops.

These factors are significant market drivers for conventional producers, and their impact is continuing to grow. An increasing number of growers are implementing integrated pest management ("IPM") programs that, among other things, combine bio-based pest management products and crop cultivating practices and techniques such as crop rotation, with conventional chemical pesticides and genetically modified crops. Bio-based pest management products are becoming a larger component of IPM programs due in part to the challenges associated with conventional chemical pesticides and genetically modified crops.

Organic Production. Certified organic crops such as food, cotton and ornamental plants, are produced without the use of synthetic chemicals, genetic modification or any other bioengineering or adulteration. As such, organic growers are limited in the number of alternatives for pest management. The U.S. Department of Agriculture, or the USDA, approved national production and labeling standards for organic food marketed in the United States in late 2000. These standards have contributed to the growth of organic food consumption in the United States, and other countries have implemented similar programs. According to the Organic Trade Association, a business association, consumer demand for organic food has outpaced the available acreage in the United States, with $1.65 billion of organic food imported in 2016 and $47 billion of domestic organic sales in 2016, representing 5.3% of all food sales (and 15% all fruits and vegetables sales), up 10.8% over 2015. Organic produce comprised $15.6 billion in 2016, up 8.4% from 2015. Globally, organic food sales reached $81.6 billion in 2015, with 50.9 million hectares planted, according to a study by the Research Institute of Organic Agriculture performed on behalf of the International Foundation for Organic Agriculture. We believe this growing demand is primarily driven by concerns about food safety and the adverse environmental effects of conventional chemical pesticides and genetically modified crops.

Water Treatment

Global demand for water treatment products was estimated to be $30.6 billion in 2017, rising 5.3% annually, according to The Freedonia Group, an independent market research firm. Demand for water treatment chemicals in the United States is forecast to rise 3.2% per year to $7.5 billion in 2019, with volume reaching 15.5 billion pounds. Invasive and native pest species are increasingly a concern in diverse applications such as hydroelectric and thermoelectric power generation, industrial applications, drinking water, aquaculture, irrigation and recreation. However, discharge of water treatment chemicals to target these pests is highly regulated, and in many cases, such as with management of open waters and sensitive environmental habitats, use of conventional chemicals is prohibited.

One particular area of concern has been the damage caused by invasive zebra and quagga mussels, which clog pipes, disrupt ecosystems, encrust infrastructure and blanket beaches with razor-sharp shells. These species initially infested the Great Lakes region and have spread across the United States. Industry reports estimate that these mussels cause approximately $1.0 billion in damage and associated control costs annually in parts of the United States alone. There are limited treatment options available, many of which are toxic to aquatic flora and fauna. To date, most treatment options have been focused either on manual removal of the mussels, which is time consuming and costly, or conventional chemical treatments, which potentially jeopardize the environment and are thus heavily controlled by regulatory agencies.

The water treatment market also includes products to control algae, aquatic weeds and unwanted microorganisms. For example, one of the most effective and popular methods for controlling algae and unwanted microorganisms is chlorination. One of the major concerns in using chlorination in surface water supplies is that chlorine combines with various organic compounds to form by-products, some of which are considered possible carcinogens.

Other Target Markets

We are also taking steps through strategic collaborations to commercialize our existing crop protection products, or variations thereof, for other markets. Although conventional chemical pesticides have traditionally serviced the industrial and institutional, professional turf and ornamental, home and garden and animal health markets, governmental regulations are restricting their use, and reports indicate that end users increasingly value environmentally friendly products, with some households willing to forego pest control treatments entirely if alternatives to conventional chemical pesticides are not available.

Benefits of Bio-Based Pest Management and Plant Health Products

While conventional chemical pesticides are often effective in controlling pests, some of these chemicals are acutely toxic, some are suspected carcinogens and some can have other harmful effects on the environment and other animals. Health and environmental concerns have prompted stricter legislation around the use of conventional chemical pesticides, particularly in Europe, where the use of some highly toxic or endocrine-disrupting chemical pesticides is banned or severely limited and the importation of produce is subject to strict regulatory standards on pesticide residues. In addition, the EU has passed the Sustainable Use Directive, which requires EU-member countries to reduce the use of conventional chemical pesticides and to use alternative pest management methods, including bio-based pest management products. Over the past two decades, U.S. regulatory agencies have also developed stricter standards and regulations. Furthermore, a growing shift in consumer preference towards organic and sustainable food production has led many large, global food retailers to require their supply chains to implement these practices, including the use of bio-based pest management and fertilizer solutions, water and energy efficiency practices and localized food product sourcing.

Aside from the health and environmental concerns, conventional chemical pesticide users face additional challenges such as pest resistance and reduced worker productivity as workers may not return to the fields for a certain period of time after treatment. Similar risks and hazards are also prevalent in the water treatment market, as chlorine and other chemicals used to control invasive water pests contaminate and endanger natural waterways. Costs of using conventional chemical pesticides are also increasing due to a number of factors, including raw materials costs, stringent regulatory requirements and pest resistance to conventional chemical pesticides, which requires increasing application rates or the use of more expensive alternative products.

As the cost of conventional chemical pesticides increases, the use of conventional chemical pesticides and genetically modified crops meets increased opposition from government agencies and consumers and the efficacy of bio-based pest management and plant health products becomes more widely recognized among growers, bio-based pest management products are gaining popularity and represent a strong growth sector within the market for pest management technologies. Growers are increasingly incorporating bio-based pest management products into IPM programs, and bio-based pest management products help create the type of sustainable agriculture programs that growers and food companies increasingly emphasize.

Bio-based pest management products include biopesticides, as well as minerals such as copper and sulfur. The EPA registers biopesticides in two major categories: (i) microbial pesticides, which contain a microorganism such as a bacterium or fungus as the active ingredient and (ii) biochemical pesticides, which are naturally occurring substances such as insect sex pheromones, certain plant extracts and fatty acids. Biostimulants, which are not registered by the EPA absent additional pest control usages, are microorganisms or natural substances derived from microorganisms or plants that growers use to reduce plant stress, stimulate plant physiology to increase yield, manage pest resistance and reduce chemical residues.

Many bio-based pest management products can perform as well as or better than conventional chemical pesticides. When used in rotation or in spray tank mixtures with conventional chemical pesticides, bio-based pest management products can increase crop yields and quality over chemical-only programs. Agricultural industry reports, as well as our own research, indicate that bio-based pest management products can affect plant physiology and morphology in ways that may improve crop yield and can increase the efficacy of conventional chemical pesticides. In addition, pests rarely develop resistance to bio-based pest management products due to their complex modes of action. Likewise, bio-based pest management products have been shown to extend the product life of conventional chemical pesticides and limit the development of pest resistance, a key issue facing users of conventional chemical pesticides, by eliminating pests that survive conventional chemical pesticide treatments. Most bio-based pest management products are listed for use in organic farming, providing those growers with compelling pest control options to protect yields and quality. Given their generally lower toxicity compared with many conventional chemical pesticides, bio-based pest management products can add flexibility to harvest timing and worker re-entry times and can improve worker safety. Many bio-based pest management products are also exempt from regulations limiting residues that apply to conventional chemical pesticides. Bio-based pest management products may not be subject to restrictions by food retailers and governmental agencies limiting chemical residues on produce, which enables growers to export to wider markets. In addition to performance attributes, bio-based pest management products registered with the EPA as biopesticides can offer other advantages over conventional chemical pesticides. From an environmental perspective, biopesticides have low toxicity, posing low risk to most non-target organisms, including humans, other mammals, birds, fish and beneficial insects. Biopesticides are biodegradable, resulting in less risk to surface water and groundwater and generally have low air-polluting volatile organic compound content. Because biopesticides tend to pose fewer risks than conventional pesticides, the EPA offers a more streamlined registration process for these products, which generally requires significantly less toxicological and environmental data and a lower registration fee. As a result, both the time and money required to bring a new product to market are reduced.

Our Solution

We produce bio-based pest management and plant health products that are effective and generally designed to be compatible with existing pest control equipment and infrastructure. This allows them to be used as alternatives for, or mixed with, conventional chemical pesticides, as well as in markets for which there are no available conventional chemical pesticides or the use of conventional chemical products may not be desirable or permissible because of health and environmental concerns. We believe that compared with conventional chemical pesticides, our products:

- can be competitive in both price and efficacy;
- provide viable alternatives where conventional chemical pesticides and genetically modified crops are subject to regulatory restrictions;
- comply with market-imposed requirements for pest management programs by food processors and retailers;
- are environmentally friendly;
- meet stringent organic farming requirements;
- improve worker productivity by shortening field re-entry times after spraying and allowing spraying up to the time of harvest;
- are exempt from residue restrictions applicable to conventional chemical pesticides in both the agriculture and water markets; and
- are less likely to result in the development of pest resistance.

In addition, our experience has shown that when our products are mixed with conventional chemical pesticides, they can:

- increase the effectiveness of conventional chemical pesticides while reducing their required application levels;
- increase levels of pest control and consistency of control;
- increase crop yields;
- increase crop quality, including producing crops with higher levels of protein, better taste and color and more attractive flowers; and
- delay the development of pest resistance to conventional chemical pesticides.

We believe that the benefits of our products will encourage sustained adoption by end users. For example, we have seen that growers that have used our products on a trial basis in one year have generally continued to use our products in higher levels in subsequent years.

Our Competitive Strengths

Focus on Bio-Based Products

Our belief in and commitment to our vision is our greatest strength. We believe that the world needs more organic and sustainable products and practices, and our goal is to champion that cause. Our experience has shown that by using bio-based pest management and plant health products, growers can benefit the environment and produce more healthy food while improving yields. However, bio-based products have application methods and modes of action that differ fundamentally from conventional chemical products. While major agrichemical companies sell bio-based products, we do not believe that those companies have sufficiently prioritized bio-based products or invested in the internal and external education that is essential to successfully promote these products, and those companies are often conflicted when marketing both conventional chemical products and bio-based products. In contrast, we believe MBI has long been recognized as a thought leader in the bio-based product industry, and we have consistently sought to educate growers in the use and benefits of these products, both alone and mixed with conventional chemical products. We believe our drive to convert acres to these sustainable practices will make us disruptive.

Commercially Available Products

We have seven commercially available product lines including five crop protection lines (Regalia, Grandevo, Venerate, Majestene/Zelto and Stargus/Amplitude), our plant health product Haven, and Zequanox for water treatment. All but Haven are EPA approved, which as a sun-protectant biostimulant is not subject to EPA registration. Regalia is also approved in Canada, ten Latin American countries (including Mexico, Brazil and Chile), South Africa, Turkey and Morocco. As of May 2016, Grandevo and Venerate are also registered in Mexico. Zequanox is approved in Canada for hydropower facilities, with a label expansion to other industrial and open water uses pending, and is the only product EPA-approved for open water application other than copper, which is rarely used due to its negative environmental effects and uneven efficacy in open water applications. All seven of these commercialized lines are subject to patents and trade secrets related to the work we have done to characterize, formulate, develop and manufacture marketable products. In March 2016, we entered into an agreement with Isagro USA to distribute Bio-Tam 2.0, an EPA-approved biofungicide that complements our existing product lines, particularly Regalia. In May 2017, we entered into an agreement with Jet Harvest Solutions to distribute Jet-Ag biofungicide/disinfectant in most of the United States. We believe these product lines, along with our other EPA-approved and EPA-submitted products and other pipeline product candidates, provide us with the foundation for continuing to build the leading portfolio of bio-based pest management and plant health products.

Robust Pipeline of Novel Product Candidates

Our pipeline of early-stage discoveries and new product candidates extends across a variety of product types for different end markets, including herbicides, fungicides, nematicides, insecticides, algaecides (for algae control), molluscicides (for mussel and snail control) and plant growth and plant stress regulators. Our product candidates are developed both internally and sourced from third parties. Our research and development process enables us to discover, source and develop multiple products in parallel, which keeps our pipeline robust. We are developing the microorganism in Venerate and Majestene/Zelto, a *Burkholderia rinojensis* bacterium that we isolated using our discovery process, as MBI-014, a bioherbicide. We also have additional product candidates at various other stages of development, including MBI-601, a fungus that produces volatile compounds and works as a soil biofumigant, which was approved by the EPA in November 2016. We previously received EPA approval of MBI-011, a weed-controlling biochemical, sarmentine, discovered and isolated from a pepper plant species, and we are currently pursuing third-party manufacturers to synthesize a “nature identical” sarmentine compound at a cost that would allow us to introduce the product to the market in the future.

Rapid and Efficient Development Process

We believe we can develop and commercialize novel and effective products faster and at a lower cost than many other developers of pest management products. For example, we have moved each of Regalia, Grandevo, Venerate, Majestene/Zelto, Stargus/Amplitude, Haven and Zequanox through development, EPA approval and first U.S. launch in approximately four years or less at a cost of $3.0 million to $6.0 million. Thereafter, we have continued to develop and refine these products, reducing manufacturing costs, producing new formulations, applying for expanded use labels and seeking new markets, in each case at a cost of less than $10.0 million per product line. In comparison, a report from Phillips McDougall shows that the average cost for major agrichemical companies to bring a new crop protection product to market has been over $280.0 million, and these products have historically taken an average of eleven years to move through development, regulatory approval and market launch.

Proprietary Discovery Process

Our discovery process allows us to efficiently discover microorganisms and plant extracts that produce or contain compounds that display a high level of pesticidal activity against various pests and target specific unmet market needs. After we identify pesticidal activity, we subject the microorganisms and plant extracts to tests to determine effects on plant growth, nutrient uptake and drought and salt stress. We then use various analytical chemistry techniques to identify and characterize the natural product chemistry of the compounds, which we optimize and patent. Four of our product candidates, one of which is EPA-approved, are what we believe to be newly identified microorganism species. We believe that five of our products produce novel compounds that we identified, and five of our products have been found to have, or produce compounds with, a novel mode of action. Our proprietary discovery process is protected by patents on the microorganisms, their natural product compounds and their uses for pest management, as well as a patent application we have received on a screening process to identify enzyme-inhibiting herbicides. We also maintain trade secrets related to the discovery, formulation, process development and manufacturing capabilities. By conducting our own discovery with a focus on unmet market needs, as well as working with outside collaborators, we are able to access the broadest range of products for commercialization, giving us an advantage over other natural bio-based pest management companies. For example, we identified Stargus/Amplitude in our discovery screen by targeting downy mildews, a problem for which there are few biological and chemical solutions.

Management Team with Significant Industry Experience

Our management team has extensive experience in bio-based pest management products and the broader agriculture industry. Our chief executive officer and other key employees average over 30 years of experience and include individuals who have led agrichemical sales and marketing organizations, top scientists and industry experts, some of whom have served in leadership roles at large multinational corporations and governmental agencies, commercialized multiple products, brought multiple products through EPA, state and foreign regulatory processes, filed patent applications and received patents, led groundbreaking research studies and published numerous scientific articles. In addition, our chief financial officer brings over 30 years of financial management experience spanning a variety of industries, including over 14 years of service as several public companies' chief financial officer. Our general counsel has over 30 years of experience, including over 25 years with public companies, in senior legal, sales and operating roles, including general counsel, vice president of sales and chief operating officer.

Our Growth Strategy

Accelerate Adoption of New Products, Product Applications and Product Lines

Our goal is to provide growers of specialty and row crops with complete and effective solutions to a broad range of pest management and plant health needs. Due to the competitive nature of the industry and the seasonality of crop growing, speed is essential to ensure widespread adoption. Accordingly, we have launched targeted placements of our products with early adopters in the United States relatively early in the product commercialization cycles and for a limited number of crop and pest applications. These growers, many of whom have unmet market needs, help us to troubleshoot and refine our products and to maximize their value proposition, enabling us to efficiently develop new formulations and expand uses and market penetration with minimal up-front capital investment per product line. We also believe we will be able to leverage growers' positive experiences using our Regalia, Grandevo, Venerate and Majestene/Zelto product lines to accelerate adoption of new products, product applications and product lines, including Stargus/Amplitude and Haven. We believe product diversity allows us to compete with larger companies, to strengthen relationships with growers and distributors and to not be dependent on any one product or product category. Further, by offering and developing multiple products simultaneously, we believe we are perceived as a technology leader and can gain the benefits of increased momentum with distributors and end users. We will continue to target early adopters of new pest management and plant health technologies with controlled product launches and educate growers and water resource managers about the benefits of bio-based pest management products through demonstrations to accelerate commercial adoption of our products.

Deliberately Expand Applications of Our Product Lines

We want growers to know and trust that our products work. Although our initial EPA-approved master labels cover our products' anticipated crop-pest use combinations, we launch early formulations of our pest management and plant health products to targeted customers under commercial labels that list a limited number of crops and applications that our initial efficacy data can best support. We then gather new data from experiments, field trials and demonstrations, gain product knowledge and get feedback to our research and development team from customers, researchers and agricultural agencies. Based on this information, we enhance our products, refine our recommendations for their use in optimal IPM programs, expand our commercial labels and submit new product formulations to the EPA and other regulatory agencies. For example, we began sales of Regalia SC, an earlier formulation of Regalia, in the Florida fresh tomatoes market in 2008, while a more effective formulation of Regalia with an expanded master label, including listing for use in organic farming, was under review by the EPA. When approved, we launched this new formulation into the Southeast United States in 2009 and nationally in 2010. In 2011, we received EPA approval of a newly expanded Regalia master label covering hundreds of crops and various new uses for applications to soil and through irrigation systems, and we expanded Regalia for use in large-acre row crops as a plant health product, in addition to its beneficial uses as a fungicide. Similarly, ongoing field development research on the microbe used in our insecticide product Venerate led to our October 2015 registration of Majestene as a nematicide. In addition, in 2017, our strategic partner, Albaugh, deployed the microbe in Venerate as part of their BIOST seed treatment for cotton, corn and soybean crops, and in January 2018, we launched a formulation of Majestene as Zelto for turf and ornamental pests. We believe we will continue to have opportunities to broaden the commercial applications and expand the use of our existing products lines into several key end markets, including large-acre row crop applications, seed treatment, turf, cannabis, forestry and public health to help drive significant growth for our company.

Focus on Proven Technology Families

We discover and develop more than one product line based on the same technology. For example, the *Burkholderia* microbe on which Venerate is based is also active against a broad range of nematodes, enabling development as our bionematicide product, Majestene/Zelto, and, when fermented under different conditions, produces several herbicidal compounds, enabling development as our bioherbicide product candidate, MBI-014. In addition, the *Chromobacterium* species on which Grandevo is based may also yield a promising bionematicide product, which we have developed as MBI-304 with positive results, both as a seed treatment and with in-furrow applications, over the course of three growing seasons. Developing multiple products based on the same microbe allows for a more efficient use of research, development and manufacturing resources and enables us to leverage capital invested in existing technologies.

Continue to Develop and Commercialize New Products in Both Existing and New Markets

Our goal is to rapidly and efficiently develop, register and commercialize new products each year, with the goal of continuing to develop a full suite of pest management and plant health products. For example, while our current crop protection and biostimulant products address plant diseases, insects and nematodes, and sun stress, we are developing products that control weeds as well as products for improving fertilizer efficiency and reducing salt stress. Our bioassay screening has identified at least four microbes that display activity against blue-green algae associated with toxic algal blooms, which have resulted in seasonal closures of some drinking water supplies in the Great Lakes region, and two companies are testing these microbes in consideration of a possible partnership.

Target International Markets

Expanding international sales is an important component of our growth strategy, but the global markets for pest management products are intensely competitive and highly regulated. Our plan is to focus on key countries and regions with the largest and fastest growing biopesticide and plant health product markets for specialty crops and select row crops. We are working with regional distributors and distributors in key countries who have brand recognition and understand how to test and market biopesticides.

Leverage Manufacturing Capabilities

We initially used third-party manufacturers to produce all of our products on a commercial scale. In 2014, we completed the repurpose of a manufacturing facility that we purchased in July 2012 by installing three 20,000 liter fermentation tanks and constructing a dedicated building to house them, which has enabled us to manufacture in-house certain of our products. In 2017, we completed a medium-scale granulation line for Grandevo WDG. We have shown that greater control of our own manufacturing capacity allows us to scale-up processes and institute process changes more quickly and efficiently while ultimately lowering manufacturing costs over time to achieve desired margins and protecting the proprietary position of our products. We continue to use third party manufacturers for Venerate, Majestene/Zelto and Haven and for spray-dried powder formulations of Grandevo and Zequanox. We are also developing plans to expand our manufacturing facility capacity in order to handle increased production volumes for increased sales.

Our Products

Commercially Available Products

The table below summarizes our current portfolio of commercially available biopesticide products, which have been able to move through development, EPA approval and first U.S. market launch in four years or less and at a cost of $3.0 million to $6.0 million. We have continued to develop and refine these products after initial launch, producing new formulations, applying for expanded use labels and seeking new markets.

NAME	MARKET	TARGET	USE	STATUS
Regalia (liquid formulations)	Crop Protection, Home and Garden, Turf and Ornamentals	Plant Disease/Plant Health	Protects against fungal and bacterial diseases and enhances yields/quality	Commercially Available Domestically and Internationally
Grandevo (dry formulations)	Crop Protection, Home and Garden, Turf and Ornamentals, Public Health, Forestry	Insects and Mites	Controls a broad range of sucking and chewing insects through feeding	Commercially Available Domestically and Mexico; International Expansion Efforts Underway
Venerate (liquid formulation)	Crop Protection, Home and Garden, Turf and Ornamentals, Animal Health, Forestry	Insects and Mites	Controls sucking and chewing insects on contact	Commercially Available Domestically and Mexico; International Expansion Efforts Underway
Majestene and Zelto (liquid formulation)	Crop Protection, Turf and Ornamentals (Zelto)	Plant Parasitic Nematodes	Controls soil-dwelling nematodes by preventing and reducing root galls, and by reducing adult reproduction and egg hatch	Commercially Available Domestically
Stargus and Amplitutde (liquid)	Crop Protection, Home and Garden, Turf and Ornamentals, Forestry; Row Crops (Amplitude)	Plant Disease/Plant Health	Protects against fungal and bacterial diseases and enhances yields	Commercially Available Domestically; Pending in Canada and Mexico (Stargus)

Haven (liquid formulation)	Crops, Home and Garden,Turf and Ornamentals	Sun stress/Plant Health/Quality	Reduces sun stress and dehydration and increases yields and quality	Commercially Available Domestically
Zequanox (dry formulation)	Water Treatment	Invasive Mussels (In-Pipe and Open Water Habitat Restoration)	Controls invasive mussels that restrict water flow in industrial and power facilities and harm recreational waters	Commercially Available Domestically and in Canada
Stargus	Crop Protection, Home and Garden, Turf and Ornamentals, Animal Health, Forestry	Plant Disease/Plant Health	Protects against fungal and bacterial diseases and enhances yields	Commercially Available Domestically; Pending in Canada and Mexico
Amplitude	Row Crop Crop Protection, for White Molds and Soil Diseases	Plant Disease/Plant Health	Protects against fungal and bacterial diseases and enhances yields	Commercially Available Domestically: Pending in Canada

Regalia

- Biofungicide
- Crop Protection, Home and Garden, Turf: Controls Plant Diseases, Improves Plant Health, Increases Yields
- Commercially Available Domestically and Internationally

Regalia, a plant extract-based fungicidal biopesticide, or “biofungicide,” is EPA-registered for crop and non-crop uses and approved for use on foliage and roots in all states in the United States, including California and Florida, where the majority of the specialty crops are grown. It is also approved for sale in Brazil (tomatoes, potatoes, dried beans), Ecuador (flowers), Mexico (citrus and tree fruit, berries, tomatoes, peppers, potatoes, cucurbits, flowers, potatoes and grapes), Turkey (covered vegetables), Canada (tomatoes, grapes, strawberries, cucurbits, apples, turf, blueberries, hops (emergency use), ornamental plants and wheat), Peru (grapes and quinoa), South Africa (grapes), Morocco (cucurbits, tomatoes and grapes), Tunisia (tomatoes) and Panama, Dominican Republic, El Salvador, Guatemala and Honduras (potatoes, tomatoes, peppers, tobacco, cucurbits, beans, avocados, citrus, peanuts, papayas and strawberries), Chile (table and wine grapes, blueberries and walnuts). Registration efforts are currently underway in China, with Regalia demonstrating efficacy in government-conducted trials on tomatoes, cucurbits, strawberries and grapes. University researchers have extensively tested the product against several important plant diseases, especially against mildews. We, and our commercial partners, have also conducted hundreds of trials in the United States and abroad, including five years of crop trials in Europe. The data show that Regalia is an effective addition to a disease management program against a broad range of diseases and can increase yields in crops such as strawberries, tomatoes, potatoes, soybeans, rice, wheat, alfalfa, sugarcane and corn.

Regalia is made from an extract of the giant knotweed plant and acts by turning on a plant's "immune system," a process called induced systemic resistance. Regalia also enhances the efficacy of major conventional chemical fungicides, and we have received issued patents on this synergism. Regalia also is effective for seed treatment of soybean, corn and cotton, for which we have filed a patent application, and we have received an issued patent on the effects on root growth and yield when Regalia is applied to the seed or as a root stimulant. For example, in field tests and in actual grower use, Regalia has shown significant yield increases on strawberries, tomatoes, potatoes, soybeans, rice, wheat, alfalfa, sugarcane, corn, and several other crops, with less irrigation required for strawberries treated with Regalia.

We obtained an exclusive license relating to the technology used in our Regalia product line while Regalia was in the process development and formulation stage of product development. In addition to developing the supply chain to commercially market the product, using our natural product chemistry expertise, we developed an analytical method to measure and characterize the major compounds in the plant extract, and we enhanced these compounds several times in new formulations, providing Regalia with a broader spectrum of activity and better efficacy than the original licensed product. In addition, we improved the physical properties of our Regalia formulations and developed four formulations that meet organic farming standards. We have filed several patent applications with respect to these innovations. In addition, we have received a U.S. patent for modulating plant growth by treating roots of plants with Regalia (or other compounds or extracts of knotweed) and transplanting the plants into soil. The European Patent Office (EPO) has granted a patent relating to the use of *Reynoutria sachalinensis* as either a plant or seed growth promoter. We have also received a patent on the synergistic combination of Regalia or knotweed extract and some important chemical fungicides.

We launched Regalia SC, an earlier formulation of Regalia, into the Florida fresh tomatoes market in December 2008. This formulation had a limited label with a few crops and uses on the label and it was not compliant for organic listing. We later received a revised, broader label with hundreds of crops for a new organic formulation, which we subsequently launched into the Florida vegetables and Arizona leafy greens markets. In January 2010, we received state approval in California and immediately launched Regalia into the leafy greens and walnuts markets. Key markets include vegetables in the southeast, citrus in Florida, leafy greens and vegetables in California and Arizona, walnuts and stone fruit in California and pome fruit and grapes in California and the Pacific Northwest. In December 2011 and August 2012, we received EPA approval and California regulatory approval, respectively, for an expanded Regalia label that includes new soil applications, instructions for yield improvement in corn and soybeans and additional crops and target pathogens. Our product for row crops is sold separately as Regalia Rx and for international markets, where the Regalia trademark is allowed, as Regalia Maxx. While we previously submitted Regalia for registration in the EU, which is one of the largest fungicide markets, in the world we recently withdrew the EU application due to Brexit and plan to resubmit using the Netherlands rather than the United Kingdom ("UK") as the designated rapporteur. Regalia is registered in South Africa, El Salvador, Guatemala Honduras, Peru, Colombia, Tunisia, Morocco, Brazil, for tomato, potato and dry beans, and Chile for grapes (table and wine), blueberries and walnuts. In 2013, 2014 and 2015, we received EPA approval for three new formulations (12%, 16% and 5%). The new 5%, with better mixing and no hexanol, launched in the US in 2016. The 12% and 16% may be used for market segmentation in the future. The new alternative formulation of Regalia 5% eliminated hexanol, a solvent that is difficult to source and is likely to experience future regulatory restrictions. This new formulation disperses better in water and is easier to mix and rinse from containers and spray equipment.

Regalia, Regalia Maxx and Regalia Rx are USDA National Organic Program compliant and OMRI-USA/OMRI-Canada listed.

Grandevo

- Bioinsecticide
- Crop Protection, Home and Garden, Turf and Ornamentals, Public Health, Forestry: Targets Insects and Mites
- Commercially Available Domestically and in Mexico, International Expansion Efforts Underway

Grandevo is based on a new species of microorganism, *Chromobacterium subtsugae*, which was discovered by a scientist at the USDA in Beltsville, Maryland, and which we have licensed and commercialized. Grandevo is a powerful feeding inhibitor: insects and mites become agitated when encountering it and will not feed and starve, or, if they do ingest it, die from disruption to their digestive system. Grandevo also has repellent effects on and reduces egg hatching and reproduction of target insects and mites. Grandevo is particularly effective against chewing insects (such as caterpillars and beetles) and sucking insects (such as stinkbugs and mealybugs, as well as thrips and psyllids, which are respectively known as "corn lice" and "plant lice") and some flies, such as the spotted wing Drosophila larvae. Trials to date and reports from grower use have shown instances of commercial levels of efficacy as good as the leading conventional chemical pesticides on a range of chewing and sucking insect and mite pests, including two invasive species of psyllid affecting citrus and potato crops. Grandevo has also shown significant control of other pests such as plant-feeding fly larvae, mosquitoes, white grubs in turf grass, "leafmining" caterpillar larvae and other leaf-eating caterpillars. Grandevo has also shown efficacy against corn rootworm, a major pest of corn, which has reportedly been resistant to corn engineered for rootworm control. Grandevo has shown efficacy against other soil pests, including wireworms, root maggots and nematodes. Field trials are ongoing to further characterize Grandevo's activity against new foliar and soil-borne pests.

We obtained a co-exclusive license for the bacterial strain used in our Grandevo product line while Grandevo was undergoing primary screening as a potential product candidate. However, as of January 2018, the USDA has indicated that we are the only current licensee. Since licensing the microorganism, we completed the testing and development necessary to produce and commercialize an EPA-approved product and have filed our own patent applications with respect to the microorganism, including its genome, synergistic combinations with conventional chemical pesticides, product formulations containing the bacterial strain as well as the chemistry produced by the microorganism upon which Grandevo is based. We have issued U.S. patents on one of these novel compounds produced by the bacteria and novel insecticidal and nematicidal uses.

We placed a prototype liquid formulation of Grandevo on a targeted basis under a limited label into the Florida citrus crop market in 2011. Commencing in the summer of 2012, we launched a dry formulation of Grandevo in markets across the United States where state registrations have been approved, targeting key markets, including citrus, tomatoes, peppers, strawberries, potatoes, leafy greens and other fruits and vegetables. This dry formulation was approved by the EPA in May 2012 and has been registered in all 50 states as well as Puerto Rico. In May 2013, we received EPA approval for a revised label reflecting Grandevo's safety for bees. In May 2016, Grandevo was approved in Mexico for use on tomatoes, peppers, potatoes, tobacco and berries, and local sales have since commenced. Recently completed trials in Mexico and Brazil against Asian citrus psyllid, the vector for citrus greening disease, demonstrate that Grandevo is an effective tool for the citrus industry, and with this data completed, MBI has applied for a label expansion for this crop-pest combination in Mexico.

Grandevo has received completeness determination from the European Commission and the process began for the evaluation for Annex 1 listing and commercialization in the EU, with a draft decision completed by the Netherlands in 2016 that recommended some new toxicology studies that were completed in 2017. A June 2015 policy decision by the European Commission, the European Food Safety Authority and a Working Group of EU Member States has allowed Grandevo, which contains only non-viable *Chromobacterium subtsugae* cells, to be evaluated as a microbial pesticide. Until this recent EU decision, only pesticides containing live microbes could be evaluated under EU regulation. Grandevo is being assessed under the Netherlands Government's "Green Deal" Initiative, which has been created with an aim to "speed up the sustainability of PPPs (plant protection products) in agriculture and horticulture by facilitating the authorization of green PPPs with a low risk for humans, animals and the environment." Efficacy trials recently completed in Europe will be used to support uses of Grandevo for the control of whitefly and thrips in Solanaceae (tomato, pepper and aubergine) and Cucurbitaceae (melon, cucumber and squash) crops.

Studies being conducted by an outside toxicology laboratory completed to support EU registration will also be used to support Grandevo registration in Canada.

Grandevo is USDA National Organic Program compliant and OMRI-USA/OMRI-Canada listed.

Venerate

- Bioinsecticide
- Crop Protection, Home and Garden, Turf and Ornamentals, Animal Health, Forestry: Targets Insects and Mites
- Commercially Available Domestically, International Expansion Efforts Underway

Venerate is based on a microbial fermentation of a new bacterial species we isolated using our proprietary discovery process. We have identified compounds produced by the microorganism in Venerate that control a broad range of chewing and sucking insects and mites, as well as flies and plant parasitic nematodes, on contact, which is complementary to the anti-feeding effects of Grandevo. In addition, because we currently sell Venerate in a liquid formulation and Grandevo in a powder formulation, we are seeking to exploit opportunities for market segmentation, including for combinations with liquid fertilizer and for low-volume aerial applications. Venerate was approved by the EPA in February 2014, and we began to sell Venerate in May 2014. Venerate was approved in Mexico and along with Grandevo, is being distributed by AgriStar. As with Grandevo, Venerate has also shown to be effective against Asian citrus psyllid in citrus, and MBI has accordingly applied for a label expansion for Venerate beyond its current uses in tomatoes, peppers, strawberries, cole crops and potatoes.

We have conducted field trials on several crops and insects and mites, many of which show efficacy as good as leading conventional chemical pesticides. Venerate has shown positive results in field trials against soil insects of corn, wheat and soybeans applied both in-furrow and as seed treatments, and has shown broad spectrum activity across a wide range of pests, including Asian citrus psyllid, corn rootworm, stinkbugs, caterpillars and weevils. Field trials of both Grandevo and Venerate again conducted in 2016 indicated good control of corn rootworms and nematodes in corn and soybeans.

We have received notice of allowance for US patent on the microorganism and received a patent on the natural product compounds that demonstrate insecticidal and nematicidal activity, and have filed applications on product formulations containing the microorganism.

Venerate is USDA National Organic Program compliant and OMRI-USA/OMRI-Canada listed.

Majestene and Zelto

- Bionematicide
- Crop Protection, Ornamentals and Turf: Targets Plant Parasitic Nematodes
- Commercially Available Domestically

Majestene/Zelto is a bionematicide we have developed based on the microorganism used in Venerate. This nematicide is active against a broad range of nematodes, and in field trials it has been as effective as or better than the leading conventional chemical nematicide against soybean cyst, root knot, lesion, stunt, reniform, lance and burrowing nematodes. Crops tested include soybean, corn, cotton, strawberry, turf, tomato, pepper, squash, potato and banana. Usage for Majestene/Zelto as a nematicide was approved by the EPA in connection with its approval of the labels for Venerate in 2014, and a modified label with refined rates, nematode species and crops was approved in October 2015. We have been issued a U.S. patent for use of the bacterial strain in Majestene/Zelto for use as a nematicide. We conducted a targeted placement of Majestene with key, early adopter growers in 2015, with our first sales in January 2016, and launched the Zelto brand for turf and ornamentals in January 2018.

Stargus** and **Amplitude

- Biofungicide and Plant Health
- Crop Protection, Home and Garden, Turf and Ornamentals, Forestry, Row Crops: Targets Plant Disease, Improves Plant Health
- Commercially available domestically

Stargus/Amplitude is based on microbial fermentations of a newly identified *Bacillus* strain we isolated using our proprietary screening platform with the “Stargus” brand targeted to most applications and “Amplitude” targeted at row crops. Stargus/Amplitude is a biofungicides, targeting difficult to control plant diseases such as *Sclerotinia* white molds, gray mold/bunch rot and downy mildews. We have identified different compounds, some of which are novel, produced by the microorganism in Stargus/Amplitude that control a broad range of plant diseases. We have filed a U.S. patent application covering fungicidal uses and have been issued a U.S. patent on related claims. We received the EPA registration of Stargus/Amplitude in October 2017 and started sales in December 2017 in the Southeast United States and also in Arizona. Several field trials were conducted in Europe in 2014 and the United States in 2013 and 2014 that showed good efficacy against white molds and downy mildews. Trials since that time continue to confirm efficacy against these diseases. We have also completed sufficient field trials in Europe to support uses on potatoes, grapes and sugar beets, and anticipate submitting Stargus/Amplitude to European authorities in 2018. We are producing Stargus/Amplitude with a third party manufacturer. Registrations are pending in California, Mexico and Canada.

Haven

- Sun Protectant
- Crops, Turf and Ornamentals: Enhances Crop Yields, Plant Health and Plant Vigor against Sun Stresses
- Commercially Available Domestically

Haven is a “sun protectant” plant health product that is applied to the leaves of plants to reduce sun stress. In stressful environments, such as intense sunlight or drought, crops lose yield and quality. Haven is based on a technology of naturally-derived, plant-based compounds that we licensed from Kao Corporation for use in the United States. The licensed patents are directed to methods of promoting plant growth and increasing biomass and crop yield. Haven reflects light and heat from leaves, which lowers plant temperatures, resulting in less stress to the crops and higher yields and quality. Field trials in 2014 in the United States and Chile demonstrated a reduction in sun-stressed fruit and an increase in quality characteristics on citrus, apples and grapes, increased yields on walnuts, almonds and wheat, often equal to or better than the commercial standard, and increased turf growth. Unlike competing products, Haven does not leave an undesirable deposit or residue on crops. Field trials in 2016 and 2017 demonstrated increased yields, plant growth and/or quality of almonds, walnuts, apples, corn, tomatoes, blackberries, grapes and citrus. As a biostimulant, Haven did not require EPA registration, but state submissions were made in the first quarter of 2017 and we launched Haven commercially in March 2017. We received California approval in January 2018.

Zequanox

- Biomolluscicide
- Water Treatment: Targets Invasive Mussels (In-Pipe and Open Water Habitat Restoration)
- Commercially Available in United States and Canada
- USDA “BioPreferred” Program Certified Product

Zequanox addresses the problem of invasive zebra and quagga mussels, which clog pipes, disrupt ecosystems, encrust infrastructure and blanket beaches with razor-sharp shells. These mussels cause approximately $1.0 billion in damage and associated control costs annually in parts of the United States alone. There are limited treatment options available, many of which are time-consuming and costly, or harm aquatic flora and fauna. Zequanox is a biomolluscicide derived from a common microbe found in soil and water bodies, *Pseudomonas fluorescens* . Zequanox is an environmentally friendly, bio-based pest management product that is designed to kill over 75% of invasive mussels in treated pipe systems without causing collateral ecological damage. In July 2012, we conducted an open water trial in Deep Quarry Lake, Illinois, where the Zequanox treatment killed more than 90% of the tested mussels on the lake bed. This level of control in open water treatments was repeated in 2013. We generated revenues for treating an Oklahoma Gas & Electric facility in 2012 and 2013 and a First Light & Power facility along the Housatonic River in Connecticut in 2014. In addition, Zequanox was used by the Minnesota Department of Natural Resources and the Minnehaha Creek Watershed District’s Aquatic Invasive Species Program in 2014 to treat an infestation of these invasive mussels in Christmas Lake, resulting in 100% control of the mussels in the tested area. Zequanox is approved in Canada and is the only product EPA-approved for open water application in the United States other than copper, which is rarely used due to its negative environmental effects. In 2017, we successfully treated a power plant in Illinois with periodic low dose applications that generated gross profit.

At recommended application rates, Zequanox is not toxic to other aquatic life, including ducks, fish, crustaceans and other bivalve species such as native clams or mussels. Zequanox is safe to workers, less labor intensive and requires shorter treatment times as compared to conventional chemical pesticides. Zequanox can be used by power plants and raw water treatment facilities as an alternative to conventional chemical treatments such as chlorine, or as a complement to those products.

We entered into a license agreement with The University of the State of New York pursuant to which we were granted an exclusive license under the University's rights relating to the bacterial strain used in our Zequanox product line while the product's natural product chemistry was still under investigation. Since then, we have developed dry powder formulations, significantly improved the fermentation process for higher cell yield, allowing us to increase manufacturing scale, and filed patent applications relating to natural product compounds in the Zequanox cells we have identified and product formulations we have developed. In addition, we received $1.1 million in grants from the National Science Foundation for work needed to commercialize the bacterial strain in Zequanox, which is currently being marketed and sold directly to U.S. power and industrial companies. In the fourth quarter of 2015, we implemented a new process at our manufacturing plant that reduced the cost of product revenues to be more competitive with other mussel treatment chemicals.

Due to our prioritization plan, we have not committed sufficient resources to Zequanox in order to market it full-scale and ramp revenues. However, we recently signed a distribution agreement with a large water treatment company, Solenis LLC ("Solenis"), to further expand Zequanox commercially for in-pipe treatments. In addition, we continue to work with state, federal and bi-national partners via the Great Lakes Commission's Invasive Mussel Collaborative and the EPA's Great Lakes Restoration Initiative ("GLRI") to further develop Zequanox in the Great Lakes/Upper Mississippi River Basin as a habitat restoration tool and potential harmful algal bloom management tool as zebra and quagga mussels selectively feed on beneficial algae while rejecting toxic blue-green algae. In 2016, the GLRI awarded a grant of more than $600,000 to support a 2017 large-scale, open water evaluation of Zequanox in Michigan. This "Tip of the Mitt" project is being jointly administered by the U.S. Geological Survey and state and local government agencies in Michigan, with MBI serving as a technical collaborator and provider of Zequanox.

Product Pipeline

Our pipeline consists of product candidates in various stages of development, including products submitted to the EPA for registration and other, as well as other early-stage discoveries. We have implemented a prioritization plan for our pipeline candidates, focusing first on those that are expected to have the greatest near-term growth potential. We are seeking collaborations with third parties to develop and commercialize more early stage candidates.

Under Development

MBI-601(Ennoble)

- Biofumigant
- Crop Protection, Home, Industrial: Targets Plant Disease, Nematodes and Insects
- Under Development

MBI-601 is a biofumigant based on a novel and proprietary genus of fungus, *Muscodor,* which was discovered by a professor at Montana State University. We obtained a co-exclusive license for several strains and species of this fungus, which produces a suite of gaseous natural product compounds that have been shown to control certain species of harmful fungi (e.g., *Fusarium, Verticillium* and *Sclerotinia*) and bacteria that cause plant diseases and to control nematodes and some insect species.

We believe that MBI-601 may be used for agricultural and industrial applications, including post-harvest control of fruit and flower decay and pre-planting control of plant diseases and nematodes as a viable alternative to methyl bromide and other chemical fumigants, which are subject to significant regulatory restrictions and for which few effective, non-toxic alternatives are available. We submitted MBI-601 to the EPA in April 2014 and received approval in November 2016. Approval is pending in California. In 2014, we obtained a license to an artificial mixture of the gaseous compounds produced by the *Muscodor* fungus, which extends the potential uses of this technology by enabling development of products at a potentially lower cost and better shelf stability than versions using the living fungus. 2017 field trials on strawberry, celery and lettuce were successful, showing efficacy as good as or better than commercial standards such as Piclor, a chemical fumigant. We are currently conducting additional field additional trials and demos in selected crops where we see the best initial fit for launch.

MBI-014

- Bioherbicide
- Crop Protection, Home and Garden, Turf: Targets Weeds
- Under Development

MBI-014 (formerly referred to as MBI-010) is based on the same species of bacteria used to produce Venerate and Majestene/Zelto, which we isolated using a proprietary discovery process that identifies herbicides that inhibit a certain plant enzyme. MBI-014 produces several herbicidal compounds, some of which are novel, that are rapidly taken up by germinating seeds and by the roots of seedling and mature weeds. MBI-014 has demonstrated effectiveness against a range of weeds, including weeds resistant to leading conventional chemical herbicides, either after or before the weeds' emergence. MBI-014 has also demonstrated a novel mode of action (inhibiting histone deacetylase enzymes and disrupting the splicing of at least two genes involved in RNA transcription), and some of its active compounds are transmitted systemically through the vascular structure of weeds. These compounds were found by our USDA collaborators to be orders of magnitude more active per acre than glyphosate, glufosinate and several other chemical herbicide chemistries. We have filed a patent application with respect to the MBI-014 formulation uses and its associated natural product compounds as an herbicide. We also received an issued U.S. patent on the process we used to discover MBI-014 and certain other bioherbicides. In 2016, we confirmed that MBI-014 can enhance glyphosate (the active ingredient in Monsanto Company's widely-distributed herbicide, Roundup), providing better control than glyphosate alone on glyphosate-resistant palmer pigweed. Due to the biodegradability of the herbicidal compounds, our formulation group needed to develop new formulations that stabilized these compounds in order to develop a product that can be competitive in the marketplace. The new formulations and new manufacturing processes to provide better yields and efficacy required us to perform additional toxicology, which is currently in its final stages. As a result, our submission of MBI-014 to the EPA has been delayed and we are currently targeting submission for the first half of 2018.

Other Products and Candidates

In addition to the above, pursuant to an agreement with Isagro USA, we distribute Bio-Tam 2.0, a biofungicide for soil-borne disease control and grapevine disease control that complements our existing products, particularly Regalia. Bio-Tam 2.0 recently gained EPA registration for grapevine trunk diseases caused by *Eutypa*, *Botyrosphaeria* (Esca), *Phomopsis* and other fungi, which are responsible for significant economic losses to the wine and grape industry worldwide, including the Western United States, and for which there are few registered conventional chemical pesticides. We also distribute Jet-Ag by Jet Harvest Solutions in most regions of the United States. Jet-Ag is a sanitizer and biochemical fungicide that works on contact against numerous fungal and bacterial plant pathogens.

We have also developed patented technology relating to a number of other product candidates, including MBI-304, a bionematicide product candidate based on the microorganism used in Grandevo; MBI-011 and MBI-005, bioherbicides that have received EPA approval; and MBI-302, a bionematicide with an EPA registration package that is nearly complete. We are also developing Stargus/Amplitude in combination with Regalia and a pre-mixture combination of reduced risk fungicides with Regalia. We are seeking collaborations with third parties to develop and commercialize some of these and other promising early-stage candidates, but as resources permit, we may choose to move some of these product candidates forward internally.

We have also discovered several microorganisms with algaecidal activity, certain of which are being tested by third-party collaborators for efficacy, and over 25 additional fungicide, herbicide, insecticide and nematicide candidates using our proprietary screening platform. In addition, we have produced a collection of microorganisms from taxonomic groups that research suggests may enhance nutrient uptake in plants, reduce stress and otherwise increase plant growth.

Our Discovery and Product Development Process

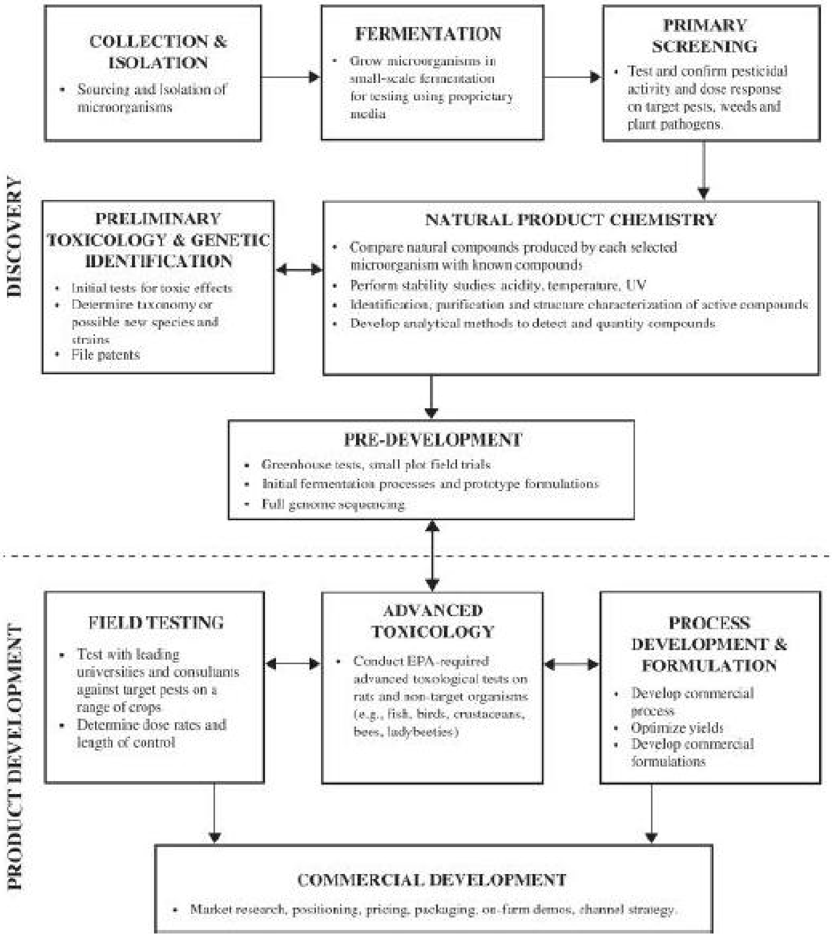
Our proprietary technology comprises a sourcing process for microorganisms and plant extracts, an extensive proprietary microorganism collection, microbial fermentation technology, screening technology and a process to identify and characterize natural compounds with pesticidal activity. Our technology enables us to isolate and screen naturally occurring microorganisms and plant extracts in an efficient manner and to identify those that may have novel, effective and safe pest management or plant health promoting characteristics. We then analyze and characterize the structures of compounds either produced by selected microorganisms or found in plant extracts to identify product candidates for further development and commercialization. We have screened more than 18,000 microorganisms and 350 plant extracts, and we have identified multiple product candidates that display significant levels of activity against insects, nematodes, weeds, plant diseases and invasive species such as zebra and quagga mussels, aquatic weeds and algae. We also have produced a collection of microorganisms from taxonomic groups that may enhance nutrient uptake in plants, reduce stress and otherwise increase plant growth. Our product candidates come primarily from our own discovery and development, as well as in-licensed technology from universities, corporations and governmental entities.

Our proprietary product development process includes several important components. For all of our product candidates, we develop an analytical method to detect the quantity of the active natural product compounds that are produced by the microorganism or that are extracted from plants. For microbial products, we develop unique proprietary fermentation processes that increase the active natural compounds produced by the microorganisms. We also scale-up fermentation volumes to maximize yields consistently in each batch. Similarly, for our plant extract-based products, we develop a manufacturing process that increases the amount of active natural compounds extracted from plant materials.

Our deep understanding of natural product chemistry allows us to develop fermentation and formulations that optimize the concentrations, efficacy and stability of compounds produced by microorganisms or plants. These methods allow us to produce products that are highly effective and of a consistent quality on a commercial scale. With the successful commissioning of our manufacturing facility, we have added a wealth of know-how and have demonstrated an ability to manufacture products that are effective and of a consistent quality on a commercial scale.

Our commercial products are sold in various formulations and are tailored to meet customers' needs and display performance characteristics such as effectiveness, shelf life, compatibility with other pesticides and ease of use. Our senior management's numerous years of experience in the development of commercial products and formulations have resulted in a highly efficient product development process.

Our discovery and development process is illustrated in the following diagram:



Discovery

We have found over 25 candidates for commercial development from our proprietary discovery process, including Venerate, a new bacterial species and bioinsecticide, MBI-011, a burndown bioherbicide, MBI-014, a systemic bioherbicide, MBI-302 and MBI-303, bionematicides, MBI-110, a biofungicide, as well as several bioalgaecides, additional biofungicides, bioherbicides, bionematicides and plant growth enhancers. Key aspects of our discovery process include:

Collection and isolation. Using our years of experience, we target selected habitats and niches of high biodiversity to collect soil, compost, insects, flowers or other biological matter from which we isolate our proprietary microorganisms on proprietary media. We capture information in a microorganism database such as taxonomic groups, geographical locations, types of samples, niches and habitats where collected and biological activity. We also isolate microorganisms that improve the efficiency of plants to uptake nitrogen and phosphorous. In addition to isolating our own microorganisms, which make up approximately 90% of our collection, we have had collaborations with three companies plus the Scripps Institution of Oceanography to diversify our sourcing of microorganisms.

Fermentation. For our microbial products, before testing the selected microorganisms for activity against pests, we ferment them to produce sufficient quantities for testing. We grow the selected microorganisms in proprietary media, which maximizes their pesticidal properties. In addition, we use proprietary fermentation processes that are designed to replicate those that would be required for large-scale fermentation and commercial production, avoiding the time and expense of an unsuccessful scale-up.

Primary screening. We use automated, miniaturized biological assays to test the selected microorganism's or plant extract's effectiveness against several weed, insect and nematode pests and plant pathogens and algae. We compare those results to conventional chemical pesticide standards. When a microorganism shows a high level of pesticidal activity, we conduct further tests to determine the spectrum of activity, mode of action, stability and activity on plants. We also test for the microorganisms' ability to reduce plant stress and promote growth.

Novel and proprietary screening methods for weeds and nematodes. We have used proprietary assays based on specific enzymes that find systemic herbicidal compounds from microorganisms, one of which is the subject of an issued patent covering identification of compounds that act systemically through plants' vascular systems. We have developed a rapid, efficient method to find microorganisms that produce compounds with a high level of activity against plant parasitic nematodes.

Natural product chemistry. Using high-performance liquid chromatography ("HPLC") with diode array detection technology, liquid chromatography-mass spectroscopy ("LCMS"), gas chromatography-mass spectroscopy ("GC-MS") and nuclear magnetic resonance ("NMR"), we compare the natural product compounds produced by each of the selected microorganisms with known compounds. This allows us to eliminate those microorganisms that produce known toxins and to select those that we believe are novel and safe. From the selected microorganisms, we identify and characterize the natural product compounds responsible for their pesticidal activity by using HPLC, LCMS, GC-MS and NMR equipment. We then develop analytical methods to measure the quantity of these compounds in individual fermentation batches, determine the quantities needed to maximize efficacy and to ensure consistent levels of these compounds from batch to batch.

Genetic identification and genomics. After confirming pesticidal activity during our primary screen, we perform the initial genetic identification of the microorganisms. Further characterization of the genome of our early stage candidates is contracted with one of several genome sequencing service companies. This characterization allows us to determine novelty compared to discoveries from others, the relatedness to human or animal pathogens, genes for compounds that are not expressed in fermentation or detected by our chemists, potential effects of our products on target crops and information about the possible mode of action on the target pest, which helps us better inform our customers hour our products work. We also file additional patent applications based on the results of these genetic identification processes.

Product Development

We believe that by maintaining a strong reputation in the industry, many opportunities come to us for development in addition to our own discoveries from our in-house efforts. Once we discover or are brought an opportunity, we make a preliminary assessment of the commercial potential of a natural product determined through laboratory, greenhouse and initial field tests. We then select product candidates we have discovered in-house or in-licensed for further development. Key aspects of our product development process include:

Development of the manufacturing process that maximizes the active natural product compounds. For our microbial biopesticide products, we develop proprietary processes that increase the yield of both the microorganism and the active natural product compounds produced by the microorganism during fermentation. Similarly, for our plant extract-based products, we develop proprietary processes that increase the amount of active natural compounds

extracted from plant materials. This process development allows us to produce products that have superior performance. For our microbial products, we then scale-up these proprietary processes in progressively larger fermentation tanks. We develop quality control methods based on the active natural product compounds rather than just the microorganisms or plant extracts. This approach results in a more consistent and effective product.

Formulation. We are able to develop proprietary wettable powder, liquid and granule formulations that allow us to tailor our products to customers' needs. This allows us to develop product formulations with enhanced performance characteristics such as effectiveness, value, shelf life, suitability for organic agriculture, water solubility, rain resistance, compatibility with other pesticides and ease of use. Formulation is critical to ensuring a bio-based pest management and plant health product's performance. Our understanding of the natural product chemistry allows us to develop formulations that maximize the effectiveness and stability of the compounds produced by the microorganisms or plants.

Field testing. We conduct numerous field trials for each product candidate that we develop. These field trials are conducted in small plots on commercial farms or research stations by our own field development specialists as well as private and public researchers to determine large-scale effectiveness, use rates, spray timing and crop safety. We conduct crop protection product field trials globally in both hemispheres to accelerate the results of our field trials and provide alternate season learning opportunities. As the crop protection product candidate nears commercialization, we conduct demonstration trials on the farm. These trials are conducted with distributors, crop consultants, influential growers and food processors on larger acreages. For Zequanox, we worked with large power and industrial customers both in the United States and Canada to obtain field trial data to help with product commercialization efforts and to obtain efficacy data.

Sales, Marketing and Distribution

In the United States, we sell our products through our own internal sales force, which consists of eight employees focused on managing distributor relationships and creating grower demand for our products. In addition, a dedicated team of three employees provide technical service support to both our customers and sales representatives on the use of our products in IPM programs, both for conventional growers as well as for an expanding number of organic growers. Our sales force covers all major regions in the United States, including California and the Pacific Northwest, the Southeast, the Northeast, the Mid-Atlantic and the Great Lakes regions, with an emphasis on high-value specialty crops (fruits, nuts and vegetables). We currently sell our crop protection product lines, Regalia, Grandevo, Venerate and Majestene/Zelto, through leading agricultural distributors, such as Crop Production Services, Helena Chemical and Aligned Ag Distributors. These are the same distribution partners that most major agrichemical companies use for delivering solutions to growers across the country. We use Albaugh for distribution of Venerate XC for the seed treatment market in the United States and Canada. In 2016, we signed an exclusive distribution agreement with Koch Agronomic Services to distribute Regalia Rx in the United States and Canada. After January 2018, this agreement becomes nonexclusive. For our water treatment product line, Zequanox, we have signed an exclusive distribution agreement with Solenis for in-pipe uses. Zequanox is also currently being marketed and sold directly to a selected group of U.S. power and industrial companies. We will continue to work with federal, state and regional agencies for open water use of Zequanox and at some point may consider working with private, commercial companies.

With respect to sales outside of the United States, we have exclusive legacy international distribution agreements for Regalia with major international distributors such as FMC (for certain markets in Latin America) and Syngenta (for specialty crop markets in Europe). Our current strategy is to work with regional distributors and distributors in key countries who have brand recognition and established customer bases and who can effectively conduct field trials and grower demonstrations with biopesticides and lead or assist in regulatory processes and market development. As such, we have signed a number of distribution agreements: Agristar (for Grandevo and Venerate in Mexico), Nufarm (for Grandevo for certain markets in New Zealand and Australia), Joacanima (for Regalia, Grandevo, Venerate and Majestene in the Philippines), Elephant Vert and Kenya Biologics for Regalia, Venerate, Grandevo and Majestene in certain parts of Africa), and Disagro (a Regalia brand for certain countries in Central America).

We have also recently entered into an agreement with Isagro USA with respect to distribution of their Bio-Tam 2.0 product line in California, Oregon, Washington and Arizona, and we distribute Jet-Ag by Jet Harvest Solutions in most regions of the United States. We believe we can leverage our existing sales, marketing and distribution network to bring in additional revenues from sales of these products, while enhancing our overall product portfolio.

We derived approximately 87%, 89% and 96% of our total revenues from Regalia, Grandevo and Venerate for the years ended December 31, 2017, 2016, and 2015, respectively. In addition, we currently rely, and expect to continue to rely, on a limited number of distributors for a significant portion of our revenues since we sell through highly concentrated, traditional distribution channels. For the year ended December 31, 2017, our top two distributors accounted for 33% of our total revenues.

While the biopesticide industry has been growing, customers in the crop production and water treatment sectors are generally cautious in their adoption of new products and technologies and may perceive bio-based pest management products as less attractive than conventional chemical pesticides. Growers often require on-farm demonstrations of a given pest management or plant health product, and given the relative novelty of our water treatment products, consumers of those products will continue to require education on their use. We are implementing the following strategies to accelerate adoption rates and promote sales of our bio-based pest management and plant health products:

Maintain a focused and effective sales and marketing team that shares our values. We were significantly negatively impacted by the tenure of our former chief operating officer, who led our sales and marketing teams, and the departure of significant members of our sales staff in the third quarter of 2014. During 2015, we rebuilt our sales and marketing teams, including hiring highly experienced personnel to train our sales force and a new head of marketing to guide an expanded marketing department. In addition, we are now more effectively organizing the data and educational material that we have amassed over nine years of operations on our bio-based products as well as organic and sustainable agricultural practices in order to train and equip our sales staff to communicate with and educate distributors and growers. We believe that hiring and training a sales and marketing staff with a high level of technical expertise and knowledge regarding the capabilities of our bio-based products is essential to expanding adoption of our products by growers and sales to distributors. In addition, we have expanded our field development team to include more technical service activities to support sales. These concerted efforts to rebuild and train our sales and marketing teams are yielding positive results, including growth in sales.

Develop an extensive demonstration program. We believe that for growers to be convinced that a bio-based pesticide or plant health product works, they often must see it for themselves. Growers risk their crop each time they try a new product, and often produce only one crop per year on any given plot of land. Further, bio-based pesticide and plant health products are often applied differently and at different times than conventional chemical pesticides and so may be used incorrectly by an inexperienced grower or advisor, decreasing efficacy. We typically conduct on-farm demonstrations with growers in the first year they try one of our products on smaller plots of land to ensure successful application, promoting the continued use of our products in future years across more acres. In addition, we work with distributors to determine which crops to emphasize in a given year and which area to maximize the effectiveness of our demonstration program.

Target early adopters of new pest management technologies. For crop protection products, we target large commercial growers in the United States, who generally set industry standards through more widespread adoption of new pest management technologies they initially test on portions of their crops. We also target organic growers, who are more willing to take risks on new products as they have had few alternatives and great demand for increased yields. We plan to continue to recruit these growers and their consultants to participate in demonstrations and field trials, enabling them to become familiar with our bio-based pest management and plant health products, to experience their benefits firsthand and to promote the use of our products with other growers in their regions. For Zequanox, we have developed strategic relationships with early adopters in the power generation business to do efficacy demonstrations while perfecting the formulations and application of the product.

Educate growers and water resource managers about the benefits of our bio-based pest management products. We will continue to perform on-farm and in-facility demonstrations and provide field data packages to support and validate our product claims. We will also continue to participate in trade shows and conferences to educate growers, their licensed pest control advisors and water resource managers about the benefits of our bio-based pest management products. When in the field, our sales and technical service team members have access to a wealth of information regarding our products and on pre-loaded tablet computers to assist in solving growers' and distributors' problems real-time. We have provided a free application for mobile phone users to assist in calculating tank mix quantities, as well as webinars and an online course on bio-based pest management products, which can be taken by growers for continuing education credit to maintain crop protection product applicator licenses. We intend to continue to expand our efforts to work with utilities, especially through potential distribution partners, which we believe will create increased demand for Zequanox in adjacent market spaces beyond the power and industrial treatment opportunities we are currently targeting.

Develop and leverage relationships with key industry influencers. We will continue to develop relationships early in the product development process with influential members within our target markets, including large innovative growers, technical experts at leading agricultural universities, licensed pest control advisors, wineries, food processors, produce packers, retailers and power facilities. We believe that educating industry influencers about the benefits of Regalia, Grandevo, Venerate, Majestene/Zelto, Haven, Stargus/Amplitude, and Zequanox and our future products increases the likelihood that they will recommend our products to our distributors and end users.

Focus our own sales and marketing on the United States, while signing strategic agreements for international markets, turf, ornamental plants and consumer retail. Because of the concentration of large growers in the United States, we can access these customers through our own sales force. For international markets for Zequanox, we have signed an exclusive distribution agreement with Solenis or in-pipe applications. For Regalia, Grandevo, Venerate and Majestene/Zelto, we have distribution agreements with leading agrichemical companies and national and regional distributors. For future products, distribution agreements will be developed with regional and national distributors or large multinationals on a case-by-case basis, depending on their expertise in the regions. We have engaged distributors that are selling Regalia in Canada for specialty crops and in parts of the Midwestern United States and Canada for row crops and Venerate in the United States one of our nematicide/insecticides for seed treatment. For the fast growing Cannabis market, we have set up two specialty distributors and expect to add more. We also are in discussions with consumer home and garden companies to distribute our products.

Manufacturing

Our manufacturing processes are developed in-house at our Davis, California research and development facilities and transferred to Bangor, Michigan facility, which was formerly used as a biodiesel plant prior to our acquisition in July 2012. Biopesticide formulation, microbial fermentation and product packaging are among the facility's core competencies. We believe in-house manufacturing enhances control and flexibility in production while lowering manufacturing costs over time to achieve desired margins, in addition to strengthening intellectual property security. The facility has significant room for expansion to install larger drying capacity and larger fermenters to accommodate production of multiple products at higher volumes. In 2017, we added a granulation line for Grandevo WDG and purchased a packaging line, which we have not yet received.

We now ferment our Grandevo and Zequanox products in our manufacturing facility, but use a third-party contractor for formulating them into spray-dried powders. The facility also accommodates full-scale production of Regalia. While we have the ability to produce the majority of our products using our own manufacturing capacity, we currently exclusively use third parties to manufacture Venerate and Majestene/Zelto as a result of regulatory requirements that would require additional capital investment to produce these products in-house. With necessary permitting now in place, we are currently working to commence manufacturing Venerate and Majestene/Zelto at the MMM plant using existing capacity. Stargus/Amplitude is also made at a third party vendor because the *Bacillus* bacteria produce spores that are hard to eliminate and could contaminate our Grandevo and Venerate fermentations. Therefore, we intend to have fermentation of *Bacillus* at our plant in the future, but in a separate building from our other products.

We anticipate ramping up production volumes as we expand the facility in the future. We expect to continue to utilize third-party manufactures in North America and the EU for supplemental production capacity to meet excess seasonal demand. As needed, we will also use our own facility or third parties to package and label products. We currently engage toll manufacturers to produce Haven (launched in March 2017), MBI-601 (for field and demos trials) and Stargus/Amplitude (first sales in December 2017). The active ingredient in our Regalia product line is derived from the giant knotweed plant, which we obtain from China. We have scaled production of Regalia using a single supplier to acquire raw knotweed from numerous regional sources and perform an extraction process on this plant and create a dried extract that is shipped to our manufacturing plant for production and packaging. We do not maintain a long-term supply contract with this supplier. While there can be no assurance that we will continue to be able to obtain dried giant knotweed plant extract from our supplier in China at a competitive price point, we estimate that our current supply of the ingredient will be sufficient to manufacture product to meet the next 6 months' demand. Should we elect or be required to do so, we do not believe that we would have substantial difficulty in finding an alternative supplier as we have identified and received quality knotweed from a number of new possible suppliers, although there can be no assurance that we will continue to be able to obtain dried extract from China at a competitive price point.

Research and Development

As of December 31, 2017, we had 39 full-time equivalent employees dedicated to research and development and patent related activities, 11 of whom hold Ph.D. degrees, plus 4 field development personnel who focus on technical support and demonstration and research field trials. Our research and development team has technical expertise in microbiology, molecular biology, natural product and analytical chemistry, biochemistry, fermentation, entomology, nematology, weed science, plant physiology, plant pathology and aquatic sciences. Our research and development activities include discovery, product development, product support, regulatory, patent and field trial activities, which are principally conducted at our Davis, California facility as well as by our field development specialists on crops and mussel-infested facilities in their respective regions. We have reduced the size of our research and development staff compared to prior periods as part of our measures to streamline business operations, but we have made, and will continue to make, substantial investments in research and development. Our research and development expenses, including patent expenses, were $10.8 million, $9.7 million and $13.5 million for the years ended December 31, 2017, 2016 and 2015, respectively.

Intellectual Property Rights

We rely on patents and other proprietary right protections, including trade secrets and proprietary know-how, to preserve our competitive position. As of December 31, 2017, we had 36 issued U.S. patents and 235 issued foreign patents (of which 3 U.S. patents and 44 foreign patents were in-licensed), 29 pending U.S. provisional and non-provisional patent applications (of which 1 was in-licensed), and 112 pending foreign patent applications (of which 4 were in-licensed) relating to microorganisms and natural product compounds, uses and related technologies. As of December 31, 2017, we had received 17 U.S. trademark registrations and had 14 trademark applications pending in the United States. As of December 31, 2017, we also had received 93 trademark registrations and had 60 trademark applications pending in various other countries.

When we find a microbial product in our screen that kills or inhibits one or more pests or pathogens in at least three replicated tests and identify the microorganism and its associated chemistry, we file a patent application claiming any one or more of the following:

- the microorganism, its DNA products, as well as mutations and other derivatives;
- the use of the microorganism for pest management;
- novel natural product compounds, their analogs and unique mixtures of compounds produced by the microorganism;
- the new use of known natural product compounds for pest management;
- formulations of the microorganism or compounds; and
- synergistic mixtures of the microorganism or compounds with conventional chemical or other pesticides.

One of our commercially available products and certain of our lead product candidates are based on microbes we have identified using our proprietary discovery process, including Venerate, Majestene/Zelto and MBI-014, which are based on a *Burkholderia* bacterium, with respect to which we have 19 issued patents and 34 pending patent applications (both U.S. and foreign), and MBI-110 and MBI-507, which are based on a *Bacillus* strain, with respect to which we have 3 issued patents and 10 pending patent applications (both U.S. and foreign).

We have also entered into in-license and research and development agreements with respect to the use and commercialization of Regalia, Grandevo, Haven and Zequanox, as well as certain products under development, including MBI-601. Under the licensing arrangements for our commercially available products, we are obligated to pay royalty fees between 2% and 5% of net sales of these products, subject in certain cases to aggregate dollar caps. The exclusivity and royalty provisions of these agreements are generally tied to the expiration of underlying patents. For Regalia, the licensed patent was related to a method of extraction of knotweed. The patents we acquired or in-licensed for Regalia and Zequanox expired in 2017, but we have filed separate patent applications with respect to both product lines and have been issued four U.S. patents with respect to Regalia and three for Zequanox. In addition, the in-licensed U.S. patent for Grandevo is expected to expire in or around 2024, but there is a pending patent application relating to Grandevo that could expire later than 2024, if issued, and we have also filed separate patent applications for Grandevo of which five have been issued on a novel compound and uses for nematodes, corn rootworm and a variety of insects.

While third parties thereafter may develop products using the technology under the expired patents, we do not believe that they can produce competitive products without infringing other aspects of our proprietary technology, and we therefore do not expect the expiration of the patents or the related exclusivity obligations to have a significant adverse financial or operational impact on our business. Certain additional information regarding the intellectual property associated with commercially available products based in part on in-licensed technology follows:

- *Regalia*. We entered into an exclusive license agreement with a company co-founded by Dr. Hans von Amsberg, a former employee of German chemical producer BASF, in May 2007 for U.S. and limited international use of a U.S. patent and technology used in our Regalia product line. Two U.S. patents have been issued on the synergistic combinations with biopesticides and conventional chemical pesticides, one patent has been issued on the new uses for soil and roots, and one patent has been issued on the new formulations of Regalia. The European Patent Office (EPO) has granted claims relating to the use of *Reynoutria sachalinensis* as either a plant or seed growth promoter.

- *Grandevo*. We entered into a co-exclusive license agreement with the USDA in November 2007 for the use in the United States of a U.S.-issued patent and a U.S. patent application relating to the *Chromobacterium subtsugae* bacteria used in our Grandevo product line. We have filed patent applications on the compounds produced in the bacterial cells, gene sequences and new uses for the *Chromobacterium subtsugae* bacteria, and for new uses and new formulations of our Grandevo product line. Five U.S. patents have been issued on a novel compound produced by the bacteria for uses on a variety of insects, use for corn rootworm populations and for nematode control. The USDA informed us that we are the only current licensee for the patent with respect to the *Chromobacterium subtsugae* bacteria.

- *Zequanox*. We entered into a license agreement with The University of the State of New York in December 2009 pursuant to which we were granted an exclusive license under the University's rights for the worldwide use of a U.S.-issued patent and a Canadian-issued patent relating to the *Pseudomonas fluorescens* bacteria used in our Zequanox product line. Four U.S. patents have been issued on the natural, mussel-killing compounds in the bacteria, and we have filed patent applications relating to various Zequanox active ingredients.

Regulatory Considerations

Our activities are subject to extensive federal, state, local and foreign governmental regulations. These regulations may prevent us or our collaborators from developing or commercializing products in a timely manner or under technically or commercially feasible conditions and may impose expenses, delays and other impediments to our product development and registration efforts. In the United States, the EPA regulates our bio-based pest management products under the Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA"), the Federal Food, Drug and Cosmetics Act ("FFDCA") and the Food Quality Protection Act ("FQPA"). In addition, some of our plant health products are regulated as fertilizers or biostimulants in each of the fifty states.

In 2004, the United States Congress passed the Pesticide Registration Improvement Renewal Act, which was reauthorized in 2007 and 2012, a result of efforts from an industry coalition of pesticide companies and environmental groups, to codify pesticide approval times in return for user fees. This law facilitates faster approval times for biopesticides, with EPA approvals typically received within 16 to 24 months, compared with 36 months or longer for conventional chemical pesticides. Registration processes for state and foreign governments vary between jurisdictions and can take up to 12 months for state governments, such as California and New York, and up to 36 months or more for foreign governments. In some instances, California and Canada will conduct joint reviews with the EPA, which allows some pesticides to receive concurrent approvals in California, Canada and the United States. However, in most instances, most foreign government submissions will not occur until after a U.S. registration has been secured. To register a crop protection product with the EPA, companies must demonstrate the product is safe to mammals, non-target organisms, endangered species and the environment. To demonstrate the bio-based pest management product's safety, required studies must be conducted that evaluate mammalian toxicology, toxicological effects to non-target organisms in the environment (ecotoxicological exposures) and physical and chemical properties of the product. The registration dossier is subject to both scientific and administrative reviews by EPA scientists and management before registration approval. The scientific review involves thorough evaluation of submitted data and completion of risk assessments for human dietary and ecotoxicological exposures. Upon completion of this process, the registration package, including the proposed label, is sent to the Office of General Council for legal review. The final step in the registration process is administrative sign-off by the EPA director of the Biopesticides and Pollution Prevention Division.

In addition to EPA approval, we are required to obtain regulatory approval from the appropriate state regulatory authority in individual states and foreign regulatory authorities before we can market or sell any pest management product in those jurisdictions. Foreign governments typically require up to two seasons of locally generated field efficacy data on crop-pest combinations before a product dossier can be submitted for review. California and foreign jurisdictions also require us to submit product efficacy data, which the EPA historically has not required, but may request.

While these regulations substantially increase the time and cost associated with bringing our products to market, we believe that our management team's significant experience in bringing our and other companies' technologies through EPA, state and foreign regulatory approval, efficient development process and ability to leverage our strategic collaborations to assist with registrations, particularly in Europe and Latin America, will enable us to overcome these challenges.

Since our plant health products (which are classified by the EPA as biostimulants) are not used to control pests, they currently fall outside the legal scope of FIFRA, FFDCA and FQPA and, therefore, we do not need to submit applications for EPA registrations for such products. However, we must still submit state registrations for our plant health products, including Haven, for which registrations were submitted in the first quarter of 2017, and those containing microbes of foreign origin may also need to be "deregulated" (or determined not to be a plant pest) under the Plant Protection Act by the USDA Animal and Plant Health Inspection Service prior to use in field trials or for large scale release. Nevertheless, the regulatory process is significantly accelerated compared to that for biopesticides.

Regalia. The EPA granted approval for the Regalia SC formulation in August 2008, for the Regalia 5% ("Regalia") formulation in May 2009, for the Regalia 20% ("Regalia Maxx") formulation in January 2010 and for a "ready to use" consumer formulation in January 2010. In January 2016, we launched a new formulation of Regalia that no longer contains hexanol, which is difficult to source and is likely to experience future regulatory restrictions. This new formulation of Regalia disperses better in water and is easier to mix and rinse from containers and spray equipment. Regalia is currently registered in all U.S. states and Puerto Rico. We have also registered Regalia Maxx in Brazil, Mexico, Canada, Chile, South Africa, Ecuador, Turkey, Panama, El Salvador, Guatemala, Honduras, Peru, the Dominican Republic, Morocco and Tunisia.

In November 2011, we submitted an Annex 1 registration dossier to the EU. Our Regalia registration package completed initial review by regulatory authorities in the UK, which was serving as lead for completing the Annex 1 (active substance) listing of Regalia for the EU. Because the UK has indicated its intention to leave the EU, we have withdrawn the Regalia dossier and will resubmit it using the Netherlands as the lead (rapporteur) country to continue the EU process. The EU regulatory process remains unpredictable and slow, but recent EU decisions on guidance for botanical pesticides and a proposed new process for biopesticide approvals in recent months indicate that the EU may become more invested in expediting the approvals of reduced risk biopesticides. Regalia Maxx would be marketed as "Sakalia" by Syngenta throughout Europe and certain parts of the Middle East and Africa.

In 2016, we successfully completed regulatory field trials China, with good results on the targeted crops of grapes, strawberries, cucurbits and tomatoes. A required second season of repeated field trials were conducted successfully in 2017, and we anticipate submitting Regalia 5% for regulatory review in China in 2018. Similarly, regulatory field trial efforts to support product approvals are underway with our distribution partners in South Africa, Kenya, the Philippines and Vietnam. We continue to discuss additional distribution partnerships with other countries in Asia, Africa and the Middle East.

Grandevo. In August 2011 and May 2012, the EPA granted approval for the Grandevo insecticide "technical grade active ingredient" and a wettable powder formulation, respectively. The wettable powder formulation is registered in all 50 states as well as Puerto Rico and the District of Columbia. In May 2013, we received EPA approval for a revised label reflecting Grandevo's safety for bees. In addition, in 2016, we received approval for registration dossier for Grandevo in Mexico. We conducted field trials for Grandevo in Brazil, the Philippines, Vietnam, Australia, New Zealand, South Africa and certain West African countries, allowing us to prepare the dossiers for submission in those countries. We submitted dossiers for Grandevo registration in Europe and Canada in 2015, with the Netherlands recently finding the Grandevo dossier meeting "completeness check" requirements in July 2015 and officially starting the dossier review for the EU. We conducted several successful field trials in Brazil on a variety of insect pests, thus allowing us to submit the dossier to regulatory authorities.

Venerate. In February 2014, the EPA granted approval for Venerate. Venerate is currently registered in 48 states and Puerto Rico, with registration pending in Hawaii. Seed treatment uses are approved and sold under Albaugh's BIOST brand. In 2014, we submitted Venerate registration dossiers in Canada and Mexico, receiving approval in Mexico in 2016. We conducted field trials for Venerate in Brazil, the Philippines, Vietnam, New Zealand, South Africa, and certain West African countries, allowing us to prepare the dossiers for submission in those countries. Several key regulatory efficacy trials to support Venerate Annex 1 listing in Europe have been completed and ongoing work, including additional toxicology studies we expect will be required will enable us to submit a dossier for Venerate in 2018. We have conducted field trials in Brazil on a variety of insect pests and will consider submitting the dossier to regulatory authorities in 2018.

Majestene/Zelto. In October 2015, the EPA granted product registration for Majestene. Majestene/Zelto is currently registered in more than 25 states, including key states of California, New York, Florida, Georgia, South Carolina, North Carolina, Wisconsin, Idaho, Washington and Oregon. With additional efficacy trial data generated in 2016, we submitted an expanded crop label to states in 2017. We are conducting field trials to expand the crops uses in California to fruit trees and vines.

Stargus/Amplitude. In October of 2017, the EPA granted approval for Stargus and Amplitude. They are registered in our priority six states with many more, including California and New York pending. Stargus and Amplitude are also pending in Canada and Mexico. We are working on developing the dossier for EU submission as we have already conducted several efficacy trials that can be used for the dossier.

Zequanox. In July 2011, the EPA granted a conditional approval of the "technical grade active ingredient" in an early formulation of Zequanox. A spray-dried powder formulation, which is an improvement over the "end product" approved in July 2011, was approved with an unconditional registration in March 2012, and this formulation is now commercially available. We also received approval for Zequanox for use in hydroelectric plants in Canada in November of 2012. We received EPA approval for open water uses in June 2014. Currently, Zequanox is being evaluated by several U.S. and Canadian federal, state and provincial entities as an invasive mussel eradication, native mussel habitat restoration and harmful algal bloom prevention tool in the Great Lakes region under the auspices of government programs. In-pipe and open water labels have been approved in all targeted states, with the exception of California where in-pipe uses are currently registered and the open water use label is under evaluation.

As with any pesticide, our pest management products will continue to be subject to review by the EPA and state regulatory agencies. The EPA has the authority to revoke the registration or impose limitations on the use of any of our
pest management products if we do not comply with the regulatory requirements, if unexpected problems occur with a product or if the EPA receives other newly discovered adverse information. See Part I-Item 1A-"Risk Factors—Risks Relating to Our Business and Strategy—Our inability to obtain regulatory approvals, or to comply with ongoing and changing regulatory requirements, could delay or prevent sales of the products we are developing and commercializing." Our research and development activities are also subject to federal, state and local worker safety, air pollution, water pollution and solid and hazardous waste regulatory programs and periodic inspection. We believe that our facilities are in substantial compliance with all applicable environmental regulatory requirements.

Competition

For pest management products, performance and value are critical competitive factors. To compete against manufacturers of conventional chemical pesticides and genetically modified crops, we need to demonstrate the advantages of our products over these more established pest management products. Many large agrichemical companies are developing, and have introduced, new conventional chemical pesticides and genetically modified products that they believe are safer and more environmentally friendly than older conventional chemical products.

The pest management market is very competitive and is dominated by multinational chemical and life sciences companies such as Arysta, BASF, Bayer, DowDuPont, FMC, Monsanto (being acquired by Bayer), Sumitomo Chemical and Syngenta (acquired by ChemChina). Universities, research institutes and government agencies may also conduct research, seek patent protection and, through collaborations, develop competitive pest management products. Other companies, including bio-specialized biopesticide businesses such as AgraQuest (now a part of Bayer), Certis USA (now a part of Mitsui), Novozymes (in a joint venture with Monsanto) and Valent Biosciences (now a part of Sumitomo) may prove to be significant competitors in the bio-based pest management and plant health market. In addition, we could face competition in the future from new, well-financed start-up companies such as AgBiome and Indigo.

In many instances, agrichemical companies have substantially greater financial, technical, development, distribution and sales and marketing resources than we do. Moreover, these companies may have greater name recognition than we do and may offer discounts as a competitive tactic. There can be no assurance that our competitors will not succeed in developing pest management products that are more effective or less expensive than ours or that would render our products obsolete or less competitive. Our success will depend in large part on our ability to maintain a competitive position with our technologies and products.

Employees

As of December 31, 2017, we had 103 full-time equivalent employees, of whom 11 hold Ph.D. degrees. Approximately 39 employees are engaged in research and development and patent related activities, 16 in sales and marketing (including 3 sales and field development personnel who focus on technical support and demonstration and research field trials), 31 in operations, including manufacturing, supply chain and quality assurance, and 17 in management, accounting/finance and administration. None of our employees are represented by a labor union.

Corporate Information

We were originally incorporated in the State of Delaware in June 2006 as Marrone Organic Innovations, Inc. Our principal executive offices are located at 1540 Drew Avenue, Davis, CA 95618. Our telephone number is (530) 750-2800. Our website address is www.marronebioinnovations.com.

ITEM 1A. RISK FACTORS

Our operations and financial results are subject to various risks and uncertainties, including those described below, which could adversely affect our business, financial condition, results of operations, cash flows, growth prospects and the trading price of our common stock.

Risks Relating to Our Business and Strategy

We have a limited number of commercialized products, have incurred significant losses to date and anticipate continuing to incur losses in the future, and we may not achieve or maintain profitability.

We are an early stage company with a limited number of commercialized products. We have incurred operating losses since our inception in June 2006, and we expect to continue to incur operating losses for the foreseeable future. As of December 31, 2017 and 2016, we had an accumulated deficit of $265.6 million and $234.6 million, respectively. For the years ended December 31, 2017, 2016 and 2015, we had a net loss attributable to common stockholders of $30.9 million, $31.1 million and $43.7 million, respectively. As a result, we will need to generate significant revenues to achieve and maintain profitability, and we may not be able to achieve profitability in the near future or at all, which may depress our stock price.

Through December 31, 2017, we have derived substantially all of our revenues from sales of Regalia, Grandevo and Venerate. In addition, we have derived revenues from strategic collaboration and development agreements for the achievement of testing validation, regulatory progress and commercialization events, and from sales of other products. Accordingly, there is only a limited basis upon which to evaluate our business and prospects. Our future success depends, in part, on our ability to market and sell other products, such as Zequanox, Venerate, Haven, and Stargus/Amplitude as well as our ability to increase sales of Regalia, Grandevo and Majestene/Zelto, to introduce new products. An investor in our stock should consider the challenges, expenses and difficulties we will face as a company seeking to develop and manufacture new types of products in a relatively established market. We expect to derive future revenues primarily from sales of our crop protection and plant health products, but we cannot guarantee the magnitude of such sales, if any. We expect to continue to devote substantial resources to expand our research and development activities, further increase manufacturing capabilities and expand our sales and marketing activities for the further commercialization of our crop protection and plant health products and other product candidates. We expect to incur additional losses for the foreseeable future, including at least the next several years, and may never become profitable.

There is uncertainty about our ability to continue as a going concern.

Our historical operating results and negative working capital as of December 31, 2017 indicate substantial doubt exists related to our ability to continue as a going concern. However, we believe that our existing cash and cash equivalents of $0.8 million at December 31, 2017, expected revenues, the net proceeds from equity financing and reduction in interest expense from debt conversion transactions during the first quarter of 2018 (as discussed in Note 17 to our financial statements included in this Annual Report), expected future debt or equity financings, and cost management as well as cost reductions will be sufficient to fund operations as currently planned for at least the next twelve months. We also anticipate securing additional sources of financing through equity and/or debt financings, collaborative or other funding arrangements with partners, or through other sources of financing, consistent with historic activities. However, we cannot predict, with certainty, the outcome of its actions to grow revenues, to manage or reduce costs or to secure additional financing from outside sources on terms acceptable to us or at all. Further, we may continue to require additional sources of cash for general corporate purposes, which may include operating expenses, working capital to improve and promote our commercially available products, advance product candidates, expand international presence and commercialization, general capital expenditures and satisfaction of debt obligations. We have based our beliefs on assumptions and estimates that may prove to be wrong, and we could spend its available financial resources less or more rapidly than currently expected. The actions discussed above cannot be considered probable of occurring and mitigating the substantial doubt raised by our historical operating results and satisfying our estimated liquidity needs for 12 months from the issuance of the financial statements. If we become unable to continue as a going concern, we may have to liquidate our assets, and stockholders may lose all or part of their investment in our common stock.

We expect to require additional financing in the future to meet our business requirements and to service our debt. Such capital raising may be costly, difficult or not possible to obtain and, if obtained, could significantly dilute current stockholders' equity interests, and we may be unable to repay our secured indebtedness.

We expect to continue to incur significant losses until we are able to significantly increase our revenue. Accordingly, we expect to need significant additional financing to maintain and expand our business, as well as to meet the financial covenants of and pay the principal and interest under our debt agreements, under which approximately $17.6 million of principal remained outstanding as of February 28, 2018 after completion of the February 2018 Financing Transactions. We intend to seek additional funds from public or private equity offerings, debt financings, strategic collaborations involving up-front cash payments or other means. Additional capital may not be available on terms acceptable to us, or at all. Any additional equity financing may be significantly dilutive to stockholders or, in some cases, require us to seek shareholder approval for the financing, and debt financing, if available, may include restrictive covenants and bear high rates of interest. In addition, our existing loan agreements contain certain restrictive covenants that either limit our ability to, or require a mandatory prepayment if we incur additional indebtedness and liens and enter into various specified transactions. We therefore may not be able to engage in any of the foregoing transactions unless we obtain the consent of our lenders or prepay the outstanding amounts under the debt agreements, which could require us to pay additional prepayment penalties. In addition, we may incur substantial costs in pursuing future capital financing, including investment banking fees, legal fees, accounting fees, securities law compliance fees, printing and distribution expenses and other costs. We also may be required to recognize non-cash expenses in connection with certain securities we issue, such as warrants, which may adversely impact our financial results.

Certain of our debt agreements also contain financial covenants, including maintaining minimum current, debt-to-worth and loan-to-value ratios and provisions providing for an event of default if there is a material adverse change in our financial condition or if we are in default under certain of our other agreements. While we are not currently in default under any of these agreements, and none of our lenders have previously declared an event of default on our indebtedness, prior to our recent receipt of waivers from our lenders, we had not been in compliance with certain of these covenants. Breach of covenants included in our debt agreements, which could result in the lenders demanding payment of the unpaid principal and interest balances. If we fail to pay any principal or interest under our indebtedness when due, or are otherwise in violation of certain covenants under our debt agreements, this may result in the acceleration of our indebtedness, which would have a material adverse effect upon our business and would likely require us to seek to renegotiate these debt arrangements with the lenders, as we may not have sufficient funds to repay that indebtedness.

If we cannot raise more money when needed, or are unable to use our future working capital, borrowings or equity financing to repay or refinance the amounts outstanding under our debt agreements or to renegotiate our debt arrangements with lenders, we may have to reduce our capital expenditures, scale-back our development of new products, reduce our workforce or license to others products that we otherwise would seek to commercialize ourselves. Any of these eventualities would likely have a material adverse impact on our value and the value of our equity.

Our business may fail if we are not able to increase sales.

Our future success will depend on our ability to significantly increase sales from the bio-based pest management products we have commercialized, both domestically and abroad. Our initial sales of our primary formulation of Regalia and our initial formulation of Grandevo occurred in the fourth quarter of 2009 and the fourth quarter of 2011, respectively. We began selling Zequanox in the second half of 2012, Venerate in May 2014, Majestene in December 2015, Haven in March 2017 and Stargus/Amplitude in December 2017. However, while we have invested considerable resources in the launch of our products, various factors have impeded higher growth in sales of these products.

For example, we believe adverse conditions in the U.S. agricultural industry, including low commodity prices, may have reduced demand for our products. Further delays in regulatory approvals of certain of our products in Europe and other jurisdictions may slow international growth, and any delay in a product launch that causes us to miss a growing season may require us to wait a year to enter that market. The extended drought in California and other markets has reduced demand for our products as fewer acres are planted, changes in weather patterns in Florida resulted in a shortened bloom cycle for the citrus market and few pesticide and plant health products being used, and certain of our strategic collaborations have not resulted in significant increases in sales of Regalia in row crops and outside of the Unites States. Due to our prioritization plan, we have not committed sufficient resources to Zequanox in order to market it full-scale, and our collaboration efforts with regard to this product may not result in increased sales. In addition, the departures of our former chief operating officer and significant members of our sales staff in the third quarter of 2014 and subsequent turnover in our sales and marketing department disrupted the 2014 launch of Venerate as well as growth in sales of our other commercialized products, including Regalia and Grandevo. Further, we believe that following the announcement of the matters relating to our restatement, some customers and potential customers were concerned about our reported investigation efforts, and therefore, were reluctant to do business with us until after we had reached a settlement with the SEC. We also believe that prior to the February 2018 Financing Transactions, concerns regarding our ability to continue operations has impacted our ability to grow sales to customers more robustly and has caused employee turnover, particularly in our sales team

Lower than expected sales growth may result in an increase in write-offs and inventory obsolescence if we are not be able to use raw materials or sell finished goods before they expire, and may result in higher proportional operating expense levels, increases in our cost of product revenues and decreases in product margins as we are unable to manufacture products as efficiently at low volumes and underutilization of our Bangor, Michigan manufacturing facility results in increased relative overhead and operating costs in addition to decreased allocation of depreciation and other costs to production and inventory. If we are unable to establish a successful sales and marketing infrastructure internally and increase sales of our commercialized products, our financial results will be adversely affected, our available cash and ability to raise additional capital will decrease and our business may fail.

We have limited experience in marketing and selling our products and will need to expand our sales and marketing infrastructure.

We currently have limited sales and marketing experience and capabilities. As of December 31, 2017, we employed 16 full-time equivalent sales and marketing personnel, 5 of whom focus on technical support and demonstration and conducting field trials and 3 of which focus on marketing. Some of these sales personnel were hired following the departures in the third quarter of 2014 of our former chief operating officer, who led our sales and marketing teams, and significant members of our sales staff. In addition, we believe that prior to the February 2018 Financing Transactions, concerns about our ability to continue operations led to some turnover of our sales and marketing team, which we believe impacted our sales during that quarter and could impact our sales in the near-term. New personnel require significant training to attain a high level of technical expertise and knowledge regarding the capabilities of our bio-based products compared with conventional chemical pest management products and techniques in order to educate growers and independent distributors on the uses and benefits of our products. We will need to further develop our sales and marketing capabilities and find partners in order to successfully increase sales of our commercially available products and to commercialize other products we are developing, which may involve substantial costs. There can be no assurance that our field development specialists and other members of our sales and marketing team will successfully compete against the sales and marketing teams of our current and future competitors, many of which may have more established relationships with distributors and growers. Our inability to recruit, train and retain sales and marketing personnel, or their inability to effectively market and sell the products we are developing, could impair our ability to gain market acceptance of our products and cause our sales to suffer.

If we are unable to maintain and further establish successful relations with the third-party distributors that are our principal customers, or they do not focus adequate resources on selling our products or are unsuccessful in selling them to end users, sales of our products will be adversely affected.

In the United States, we rely on independent distributors of agrichemicals to distribute and assist us with the marketing and sale of Regalia, Grandevo, Venerate, Majestene/Zelto, Haven, Stargus/Amplitude and other products we are developing. We also are leveraging these relationships to sell Bio-Tam 2.0 in California, Oregon, Washington and Arizona and Jet-Ag in most U.S. regions. These distributors are our principal customers, and revenue growth will depend in large part on our success in establishing and maintaining this sales and distribution channel. However, there can be no assurance that our distributors will be successful in selling our products to end users, or will focus adequate resources on selling them, and they may not continue to purchase or market our products for a number of reasons.

For example, many distributors lack experience in marketing bio-based pest management and plant health products, which generally must be used differently than conventional chemical pesticides. Distributors may not continue to market our products if they receive negative feedback from end users and key influencers (pest control advisors and university researchers), or if we believe our products are being blamed for damage to treated plants caused by other pesticides with which our products have been combined (whether properly or improperly). In addition, many of our distributors are in the business of distributing and manufacturing other, possibly competing, pest management and plant health products, including internally developed and commercialized bio-based products as well as bio-based products developed by larger agrichemical companies that negotiate to "bundle" such specialty products with other high demand products. As a result, our distributors may earn higher margins by selling competing products or combinations of competing products. Our Audit Committee investigation, financial restatement and SEC investigation imposed additional work on our distributors, which was perceived negatively in some cases. If we are unable to establish or maintain successful relationships with independent distributors, we need to further develop our own sales and demand creation capabilities, which would be expensive and time-consuming, and the success of which would be uncertain.

The product candidates we select for development and commercialization may fail to generate significant revenues, and we may not be able to successfully enter into strategic collaborations with respect to our other product candidates.

Our internal development efforts are limited to two product candidates: MBI-014, a bioherbicide that is based on the same microorganism in Venerate and Majestene/Zelto, which we plan to submit to the EPA in 2018; and MBI-601, a biopesticide that produces gaseous natural compounds that functions as a "biofumigant," which received EPA approval in November 2016. We are now focusing on MBI-014 submission and reducing the manufacturing cost of MBI-601. Simultaneously, we are seeking collaborations with third parties to develop and commercialize more early stage candidates on which we have elected not to expend significant internal resources.

Successful development of product candidates will require significant additional investment, including costs associated with research and development, completing field trials and obtaining regulatory approval, as well as the ability to manufacture our products in large quantities at acceptable costs while also preserving high product quality. Difficulties often encountered in scaling up production include problems involving production yields, quality control and assurance, shortage of qualified personnel, production costs and process controls. In addition, we are subject to inherent risks associated with new products and technologies. These risks include the possibility that any product candidate may:

- be found unsafe;
- be ineffective or less effective than anticipated;
- fail to receive or take longer to receive necessary regulatory approvals;
- be difficult to competitively price relative to alternative pest management solutions;
- be harmful to consumers, growers, farm workers or the environment;
- be harmful to crops when used in connection with conventional chemical pesticides;
- be difficult or impossible to manufacture on an economically viable scale;
- be subject to supply chain constraints for raw materials;
- fail to be developed and accepted by the market prior to the successful marketing of similar products by competitors;
- be impossible to market because it infringes on the proprietary rights of third parties; or
- be too expensive for commercial use.

Our decisions regarding which product candidates to pursue may cause us to fail to capitalize on product candidates that could have given rise to viable commercial products and profitable market opportunities. In addition, we may not be successful in entering into new arrangements with third parties, on favorable terms or at all, with respect to product candidates we do not pursue internally.

Adverse weather conditions, climate change and other natural conditions can reduce acreage planted or incidence of crop disease or pest infestations, which can adversely affect our results of operations.

Production of the crops on which our products are typically applied is vulnerable to extreme weather conditions such as heavy rains, hurricanes, hail, tornadoes, freezing conditions, drought, fires and floods. Weather conditions can be impacted by climate change resulting from global warming, including changes in precipitation patterns and the increased frequency of extreme weather events, or other factors. Unfavorable weather conditions can reduce both acreage planted and incidence (or timing) of certain crop diseases or pest infestations, each of which may reduce demand for our products. For example, since 2012, global warming has led all or parts of the United States to experience abnormally low rainfall or drought relative to historical periods, reducing the incidence of fungal diseases such as mildews and the demand for fungicides such as Regalia. These conditions have persisted or worsened particularly in California and the Pacific Northwest, resulting in continued reductions in acreage planted throughout those regions. Shortened bloom cycles relating to changes in weather patterns also could reduce the amount of pesticides and plant health products used during a growing season. For example, in 2014, the Florida citrus market experienced a shortened bloom cycle as a result of changes in weather patterns, which negatively affected our sales of Grandevo in the Florida market. Climate change has also led to increasingly powerful hurricanes, which disrupt agriculture and significantly affected sales of crop protection products to Florida and Puerto Rico in the third and fourth quarters of 2017.

In addition, ideal weather conditions can reduce the incidence of diseases and pest infestations and increase yields without the use of additional pesticide and plant health applications. Increased yields can also reduce commodity prices causing growers to make a decision not to increase costs by reducing the amount of pesticides and plant health products used during a growing season. Since all of our products have different margins, changes in product mix as a result of these conditions could affect our overall margins.

If our ongoing or future field trials are unsuccessful, we may be unable to obtain regulatory approval of, or commercialize, our products on a timely basis.

The successful completion of multiple field trials in domestic and foreign locations on various crops and water infrastructures is critical to the success of our product development and marketing efforts. If our ongoing or future field trials are unsuccessful or produce inconsistent results or unanticipated adverse side effects on crops or on non-target organisms, or if we are unable to collect reliable data, regulatory approval of our products could be delayed or we may be unable to commercialize our products. In addition, more than one growing or treatment season may be required to collect sufficient data and we may need to collect data from different geographies to prove performance for customer adoption. Although we have conducted successful field trials on a broad range of crops, we cannot be certain that additional field trials conducted on a greater number of acres, or on crops for which we have not yet conducted field trials, will be successful. Moreover, the results of our ongoing and future field trials are subject to a number of conditions beyond our control, including weather-related events such as drought or floods, severe heat or frost, hail, tornadoes and hurricanes, or low or no natural occurrence of the pests intended for testing. Generally, we pay third parties, such as growers, consultants and universities, to conduct field tests on our behalf. Incompatible crop treatment practices or misapplication of our products by these third parties or lack of sufficient occurrence of the identified pests in nature for a particular trial could impair the success of our field trials.

Our inability to obtain regulatory approvals, or to comply with ongoing and changing regulatory requirements, could delay or prevent sales of the products we are developing and commercializing.

The field testing, manufacture, sale and use of pest management products, including Regalia, Grandevo, Zequanox, Venerate, Majestene/Zelto, Stargus/Amplitude and other products we are developing, are extensively regulated by the EPA and state, local and foreign governmental authorities. These regulations substantially increase the time and cost associated with bringing our products to market. If we do not receive the necessary governmental approvals to test, manufacture and market our products, or if regulatory authorities revoke our approvals, do not grant approvals in a timely manner or grant approvals subject to restrictions on their use, we may be unable to sell our products in the United States or other jurisdictions, which could result in a reduction in our future revenues.

We have received approval from the EPA for the active ingredients and certain end product formulations for Regalia, Grandevo, Zequanox, Venerate, Majestene/Zelto, Stargus/Amplitude, MBI-601, MBI-005 and MBI-011. As we introduce new formulations of and applications for our products, we need to seek EPA approval prior to commercial sale. For any such approval, the EPA may require us to fulfill certain conditions within a specified period of time following initial approval. We are also required to obtain regulatory approval from other state and foreign regulatory authorities before we market our products in their jurisdictions, some of which have taken, and may take, longer than anticipated.

Some of these states and foreign countries may apply different criteria than the EPA in their approval processes. Although federal pesticide law preempts separate state and local pesticide registration requirements to some extent, state and local governments retain authority to control pesticide use within their borders.

There can be no assurance that we will be able to obtain regulatory approval for marketing our additional products or new product formulations and applications we are developing. Although the EPA has in place a registration procedure for biopesticides like Regalia and Grandevo that is streamlined in comparison to the registration procedure for conventional chemical pesticides, there can be no assurance that all of our products or product extensions will be eligible for this streamlined procedure or that additional requirements will not be mandated by the EPA that could make the procedure more time consuming and costly for our future products.

Additionally, for California state registration and registration in jurisdictions outside of the United States, all products need to be proven efficacious for each proposed crop-pest combination, which can require costly field trial testing, and a favorable result is not assured. Because many of the products that may be sold by us must be registered with one or more government agencies, the registration process can be time consuming and expensive, and there is no guarantee that the product will obtain all required registrations. We have intentionally obtained registration in some jurisdictions and not in others. California is one of the largest and most important producers of agricultural products in the world. Because of its stringent regulation of pesticides and environmental focus, we also view California as one of the most natural and attractive markets for our products. However, California is also very stringent, is generally more time consuming and lacks legally mandated deadlines for its reviews of reduced-risk biopesticides. Therefore, gaining concurrent approvals with the EPA, other states and sometimes even other countries may not always be achievable. Even if we obtain all necessary regulatory approvals to market and sell our products, they will be subject to continuing review and extensive regulatory requirements, including periodic re-registrations. The EPA, as well as state and foreign regulatory authorities, could withdraw a previously approved product from the market upon receipt of newly discovered information, including an inability to comply with their regulatory requirements or the occurrence of unanticipated problems with our products, or for other reasons.

Bio-based pest management and plant health products are not well understood, which necessitates investment in customer education and makes effectively marketing and selling our products difficult.

The market for bio-based pest management and plant health products is underdeveloped when compared to conventional pesticides. Customers in the crop production sector and the water treatment sector are generally cautious in their adoption of new products and technologies. Growers often require on-farm demonstrations of a given pest management or plant health product. Initial purchases of the product tend to be conservative, with the grower testing on a small portion of their overall crop. As the product is proven, growers incorporate the product into their rotational programs and deploy it on a greater percentage of their operations. As a result, large scale adoption generally takes several growing seasons. Water treatment products must also pass efficacy and ecological toxicity tests. In addition, given the relative novelty of our water treatment products, consumers of those products will continue to require education on their use, which may delay their adoption.

In addition, customers have historically perceived bio-based pest management products as more expensive and less effective than conventional chemical pesticides. To succeed, we will need to continue to change that perception. To the extent that the market for bio-based pest management products does not further develop or customers elect to continue to purchase and rely on conventional chemical pesticides, our market opportunity will be limited.

The high level of competition in the market for pest management and plant health products may result in pricing pressure, reduced margins or the inability of our products to achieve market acceptance.

The markets for pest management and plant health products are intensely competitive, rapidly changing and undergoing consolidation. We may be unable to compete successfully against our current and future competitors, which may result in price reductions, reduced margins and the inability to achieve market acceptance for our products.

Many entities are engaged in developing pest management and plant health products. Our competitors include major multinational agrichemical companies such as Arysta, BASF, Bayer, DowDuPont, FMC, Monsanto, Sumitomo Chemical and Syngenta, some of which have developed bio-based products for our target markets, as well as specialized bio-based pesticide and plant health businesses such as AgraQuest (now a part of Bayer), Certis USA (now a part of Mitsui), Novozymes (in a joint venture with Monsanto) and Valent Biosciences (now a part of Sumitomo). Many of these organizations have longer operating histories, significantly greater resources, greater brand recognition and a larger base of customers than we do. As a result, they may be able to devote greater resources to the manufacture, promotion or sale of their products, receive greater resources and support from independent distributors, initiate or withstand substantial price competition or more readily take advantage of acquisition or other opportunities. Further, many of the large agrichemical companies have a more diversified product offering than we do, which may give these companies an advantage in meeting customers' needs by enabling them to offer a broader range of pest management and plant health solutions. In addition, we could face competition in the future from new, well-financed start-up companies such as AgBiome and Indigo.

Our product sales are subject to weather conditions and other factors beyond our control, which may cause our operating results to fluctuate significantly quarterly and annually.

The level of seasonality in our business overall is difficult to evaluate as a result of our relatively short history of sales, our relatively limited number of commercialized products, our expansion into new geographical territories, the introduction of new products, the timing of introductions of new formulations and products and our recognition of revenue on both a "sell-in" and "sell-through" basis, depending on the transaction, and the impact of weather and climate change. It is possible that our business may become more seasonal, or experience seasonality in different periods, than anticipated, particularly if we expand into new geographical territories, add or change distributors or distributor programs or introduce new products with different applicable growing seasons, or if a more significant component of our revenue becomes comprised of sales of Zequanox, which has a separate seasonal sales cycle compared to our crop protection products.

Notwithstanding any such seasonality, we expect substantial fluctuation in sales year over year and quarter over quarter as a result of a number of variables on which sales of our products are dependent. Weather conditions, natural disasters and other factors affect planting and growing seasons and incidence of pests and plant disease, and accordingly affect decisions by our distributors, direct customers and end users about the types and amounts of pest management and plant health products to purchase and the timing of use of such products. In addition, disruptions that cause delays by growers in harvesting or planting can result in the movement of orders to a future quarter, which would negatively affect the quarter and cause fluctuations in our operating results. For example, late snows and cold temperatures in the Midwestern and Eastern United States in the first and second quarters of 2014 delayed planting and pesticide and plant health applications, and Florida and Puerto Rico hurricanes destroyed crops. Customers also may purchase large quantities of our products in a particular quarter to store and use over long periods of time or time their purchases to manage their inventories, which may cause significant fluctuations in our operating results for a particular quarter or year, and low commodity prices may discourage growers from purchasing our products in an effort to reduce their costs and increase their margins for a growing season.

Our expense levels are based in part on our expectations regarding future sales. As a result, any shortfall in sales relative to our expectations could cause significant fluctuations in our operating results from quarter to quarter, which could result in uncertainty surrounding our level of earnings and possibly a decrease in our stock price.

We rely on the experience and expertise of our senior management team and other key personnel, and if we are unable to recruit or retain qualified personnel, our development and commercialization efforts may be significantly delayed.

We depend heavily on the principal members of our management, particularly Pamela G. Marrone, Ph.D., our founder and Chief Executive Officer, the loss of whose services might significantly delay or prevent the achievement of our scientific or business objectives. Although we maintain and are the beneficiary of $10.0 million in key person life insurance policies for the life of Dr. Marrone, we do not believe the proceeds would be adequate to compensate us for her loss.

We have a lean staff, and rely on qualified sales and marketing, research and development and management personnel to succeed. For example, the departures of our former chief operating officer and significant members of our sales staff in the third quarter of 2014 and subsequent turnover in our sales and marketing department adversely impacted our business by disrupting the 2014 launch of Venerate as well as the growth in sales of our other commercialized products, including Regalia and Grandevo. In addition, we had significant turnover in our sales and marketing department during the fourth quarter, which we believe impacted our sales during that quarter and could impact our sales in the near-term. The process of hiring, training and successfully integrating qualified personnel into our operation is lengthy and expensive. The market for qualified personnel, such as experienced fermentation engineers and formulation chemists, is very competitive because of the limited number of people available with the necessary technical skills and understanding of our technology and anticipated products, and few sales and marketing personnel have prior experience with bio-based products. Perceived instability and risk in our business has made it difficult to retain qualified personnel and could impair our ability to meet our business objectives and adversely affect our results of operations and financial condition.

If we or our third-party manufacturers are unable to produce our products at a satisfactory quality, in a timely manner, in sufficient quantities or at an acceptable cost, our business could be negatively impacted.

We have transitioned the majority of our manufacturing processes in-house to our facility in Bangor, Michigan. If severe weather, a fire or natural disaster occurs, a contaminant grows in our fermentations, or a mechanical or labor problem leads to a reduced capacity or shutdown of our fermenters or other equipment, we may not be successful in producing the amount and quality of product we anticipate in the facility and our results of operations may suffer as a result.

We also continue to rely on third parties to formulate Grandevo and Zequanox into spray-dried powders, for all of our production of Venerate, Majestene/Zelto, Stargus/Amplitude and Haven, and from time to time, we expect to use third-party manufacturers for supplemental production capacity to meet excess seasonal demand and for packaging. Our reliance on third parties to manufacture our products presents significant risks to us, including the following:

- reduced control over delivery schedules, yields and product reliability;
- price increases;
- manufacturing deviations from internal and regulatory specifications, including contaminations;
- the failure of a key manufacturer to perform its obligations to us for technical, market or other reasons;
- challenges presented by introducing our fermentation processes to new manufacturers or deploying them in new facilities;, including contaminations;
- difficulties in establishing additional manufacturers if we are presented with the need to transfer our manufacturing process technologies to them;
- misappropriation of our intellectual property; and
- other risks in potentially meeting our product commercialization schedule or satisfying the requirements of our distributors, direct customers and end users.

We have not entered into any long-term manufacturing or supply agreements for any of our products, and we may need to enter into additional agreements for the commercial development, manufacturing and sale of our products. There can be no assurance that we can do so on favorable terms, if at all.

Our products have been produced in quantities sufficient to meet commercial demand. However, our dependence upon others for the production of a portion of our products, or for a portion of the manufacturing process, particularly for drying, may adversely affect our ability to develop and commercialize our products on a timely and competitive basis. If manufacturing capacity is reduced or eliminated at one or more of our third-party manufacturers' facilities, we could have difficulties fulfilling our customer orders, and our net revenues and results of operations could decline.

We must accurately forecast demand for our products to obtain adequate and cost-effective capacity from our third-party manufacturers and to purchase certain of the raw materials used in our products at cost-effective rates. Our third-party manufacturers are not required to supply us products until we place and they accept our purchase orders, which generally occurs approximately one month prior to the anticipated product delivery date based on our own rolling forecasts. Our purchase orders may not be accepted and our third-party manufacturers may not be willing to provide us with additional products on a timely basis if they prioritize orders placed by other companies, many of whom are more established than us and order larger volumes of products. In addition, while raw material orders are generally placed one month in advance, because certain of the raw materials used in our products are in short supply or are subject to capacity demands, we place some raw material orders approximately six months in advance to avoid paying higher prices. Accordingly, if we inaccurately forecast demand for our products, we may be unable to meet our customers' delivery requirements, or we may accumulate excess inventories of products and raw materials.

Failure to achieve expected manufacturing yields and pesticidal activity or contamination of our production runs could negatively impact our operating results.

We do not know whether a yield problem exists until our products are manufactured. When a yield issue is identified, the product is analyzed and tested to determine the cause. As a result, yield deficiencies may not be identified until well into the production process. We may experience inability to ramp up yields in our own manufacturing facility or third-party manufacturers. In the event that we continue to rely on third-party manufacturers, resolution of yield problems requires cooperation among, and communication between, us and our manufacturers. Third-party manufacturers as well as our own plant in Michigan may contaminate the runs of our products while in process, causing a run failure and causing us to miss sales opportunities or a season. We will not succeed if we cannot maintain or decrease our production costs and effectively scale our technology and manufacturing processes with the desired yields and pesticidal activity and without contaminations.

We rely on a single supplier based in China for a key ingredient of Regalia.

The active ingredient in our Regalia product line is derived from the giant knotweed plant, which we obtain from China. Our single supplier acquires raw knotweed from numerous regional sources and performs an extraction process on this plant, creating a dried extract that is shipped to our third-party manufacturer in the United States. Although we have identified additional sources of knotweed at competitive prices that appear to be reliable and of appropriate quality, there can be no assurance that we will continue to be able to obtain dried extract from China at a competitive price point. The Company endeavors to keep 6 months of knotweed extract on hand at any given time.

Other ingredients used in the manufacturing of our products are also sourced from a limited number of suppliers. There can be no assurance that we will continue to be able to obtain such ingredients reliably and of appropriate quality at a competitive price point.

Our collaborative efforts on Zequanox may not result in increased sales.

Our Zequanox product line is principally designed to control invasive mussels that restrict critical water flow in industrial and power facilities and impinge on access to recreational waters. Due to our prioritization plan, we have not committed sufficient resources to this product in order to market it full-scale. We recently signed an exclusive distribution agreement with Solenis to expand Zequanox commercially, but this agreement may not result in increased sales. Our collective ability to generate significant revenues from Zequanox has been dependent on persuading customers to evaluate the costs of our Zequanox products compared to the overall cost of the chlorine treatment process, the primary current alternative to using Zequanox, rather than the cost of purchasing chemicals alone. Sales of Zequanox could remain lower than our other products due to the length of the treatment cycle, the longer sales cycle (the bidding process with utility companies and government agencies occurs on a yearly or multi-year basis) and the unique nature of the treatment approach for each customer based on the extent of the infestation and the design of the facility.

We depend on a limited number of distributors.

Our current revenues are derived from a limited number of key customers, each of which serves as a third-party distributor to our products' end users. For the years ended December 31, 2017, 2016 and 2015, our top two distributors accounted for 33%, 30% and 38% of our total revenues, respectively. We expect a limited number of distributors to continue to account for a significant portion of our total revenues for the foreseeable future. This customer concentration increases the risk of quarterly fluctuations in our revenues and operating results. The loss or reduction of business from one or a combination of our significant distributors could materially adversely affect our revenues, financial condition and results of operations.

Any decline in U.S. agricultural production could have a material adverse effect on the market for pesticides and on our results of operations and financial position.

Conditions in the U.S. agricultural industry significantly impact our operating results. The U.S. agricultural industry has contracted in recent periods, and can be affected by a number of factors, including weather patterns and field conditions, current and projected grain inventories and prices, domestic and international demand for U.S. agricultural products and U.S. and foreign policies regarding trade in agricultural products. State and federal governmental policies, including farm subsidies and commodity support programs, as well as the prices of fertilizer products and the prices at which produce may be sold, may also directly or indirectly influence the number of acres planted, the mix of crops planted and the use of pesticides for particular agricultural applications.

Our intellectual property is integral to our business. If we are unable to protect our patents and proprietary rights in the United States and foreign countries, our business could be adversely affected.

Our success depends in part on our ability to obtain and maintain patent and other proprietary rights protection for our technologies and products in the United States and other countries. If we are unable to obtain or maintain these protections, we may not be able to prevent third parties from using our proprietary rights. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. As of December 31, 2017, we had 36 issued U.S. patents and 235 issued foreign patents (of which 3 U.S. patents and 44 foreign patents were in-licensed), 29 pending provisional and non-provisional U.S. patent applications (of which 1 was in-licensed) and 112 pending foreign patent applications (of which 4 were in-licensed).

The patent position of biotechnology and biochemical companies generally is highly uncertain, involves complex legal and factual questions and has in recent years been the subject of much litigation. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our technology or products, in whole or in part, or which effectively prevent others from commercializing competitive technologies and products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. For example, the U.S. Supreme Court has ruled on several patent cases in recent years, either narrowing the scope of patent protection available in certain circumstances or weakening the rights of patent owners in certain situations. In addition, recent changes to the patent laws of the United States provide additional procedures for third parties to challenge the validity of issued patents, some of which allow a lower evidentiary standard to hold a patent claim invalid. The laws of some foreign countries do not protect proprietary rights to the same extent as the laws of the United States, and we may encounter significant problems and costs in protecting our proprietary rights in these foreign countries.

Our patents, and those patents for which we have license rights, may be challenged, narrowed, invalidated or circumvented. In addition, our issued patents may not contain claims sufficiently broad to protect us against third parties with similar technologies or products or provide us with any competitive advantage. We are not certain that our pending patent applications will be issued. Moreover, our competitors could challenge or circumvent our patents or pending patent applications. It is also not possible to patent and protect all knowledge and know-how associated with our products, so there may be areas that are not protected such as certain formulations and manufacturing processes. 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 could adversely affect our competitive business position.

For certain of our products, we hold co-exclusive licenses to certain of the intellectual property related to these products. Although our products that are derived from intellectual property licensed to us on a co-exclusive basis also include our own proprietary technology, the third parties with whom we share co-exclusive rights may develop products based on the same underlying intellectual property. This could adversely affect the sale of our products.

Intellectual property litigation could cause us to spend substantial resources and could distract our personnel from their normal responsibilities.

Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development, sales, marketing or distribution activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position could be harmed.

We have taken measures to protect our trade secrets and know-how, including the use of confidentiality agreements with our employees, consultants, advisors and third-party manufacturers. It is possible that these agreements may be breached and that any remedies for a breach will not make us whole. In addition, some courts inside and outside of the United States are less willing or unwilling to protect trade secrets. We generally control and limit access to, and the distribution of, our product documentation and other proprietary information. Despite our efforts to protect these proprietary rights, our trade secret-protected know-how could fall into the public domain, and unauthorized parties may copy aspects of our products and obtain and use information that we regard as proprietary. We also cannot guarantee that other parties will not independently develop our knowhow or otherwise obtain access to our technologies.

Third parties may misappropriate our microbial strains.

Third parties, including contract manufacturers, often have custody or control of our microbial strains. If our microbial strains were stolen, misappropriated or reverse engineered, they could be used by other parties who may be able to reproduce the microbial strains for their own commercial gain. If this were to occur, it would be difficult for us to challenge and prevent this type of use, especially in countries with limited intellectual property protection.

Other companies may claim that we infringe their intellectual property or proprietary rights, which could cause us to incur significant expenses or prevent us from selling our products.

Our success depends in part on our ability to operate without infringing the patents and proprietary rights of third parties. Product development is inherently uncertain in a rapidly evolving technological environment such as ours in which there may be numerous patent applications pending, many of which are confidential when filed, with regard to similar technologies. Patents issued to third parties may contain claims that conflict with our patents and that may place restrictions on the commercial viability of our products and technologies. Third parties could assert infringement claims against us in the future. We may become party to, or threatened with, future adversarial proceedings or litigation regarding intellectual property rights with respect to our products, product candidates and technology. We may not be aware of all such third-party intellectual property rights potentially relevant to our products and product candidates.

Any litigation, adversarial proceeding or proceeding before governmental authorities regarding intellectual property rights, regardless of its outcome, would probably be costly and require significant time and attention of our key management and technical personnel. Litigation, adversarial proceedings or proceedings before governmental authorities could also force us to:

- stop or delay selling, manufacturing or using products that incorporate the challenged intellectual property;
- pay damages; and/or
- enter into licensing or royalty agreements which, if available at all, may only be available on unfavorable terms.

Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar negative impact on our business.

We use hazardous materials in our business and are subject to potential liability under environmental laws. Any claims relating to improper handling, storage or disposal of hazardous materials could be time consuming and costly to resolve.

We are subject to federal, state and local laws and regulations governing the use, manufacture, storage, handling, disposal and release of hazardous materials and certain waste products. Our research and development and manufacturing activities involve the controlled use of hazardous materials and biological waste. Some of these materials may be novel, including bacteria with novel properties and bacteria that produce biologically active compounds. We cannot eliminate the risk of accidental contamination or discharge and any injury resulting from these materials. In addition, although we have not currently identified any environmental liabilities, the manufacturing facility we purchased in July 2012 may have existing environmental liabilities associated with it that may also result in successor liabilities for us, and we will be subject to increased exposure to potential environmental liabilities as we manufacture our products on a larger scale. We may also be held liable for hazardous materials brought onto the premises of our manufacturing facility before we acquired title, without regard for fault for, or knowledge of, the presence of such substances, as well as for hazardous materials that may be discovered after we no longer own the property if we sell it in the future. In the event of an accident, or if any hazardous materials are found within our operations or on the premises of our manufacturing facility in violation of the law at any time, we may be liable for all cleanup costs, fines, penalties and other costs. This liability could exceed our resources, and, if significant losses arise from hazardous substance contamination, our financial viability may be substantially and adversely affected.

In addition, we may have to incur significant costs to comply with future environmental laws and regulations. We cannot predict the impact of new governmental regulations that might have an adverse effect on the research, development, production and marketing of our products. We may be required to incur significant costs to comply with current or future laws or regulations. Our business may be harmed by the cost of compliance.

Our collaborators may use hazardous materials in connection with our collaborative efforts. To our knowledge, their work is performed in accordance with applicable biosafety regulations. In the event of a lawsuit or investigation, however, we could be held responsible for any injury caused to persons or property by exposure to, or release of, hazardous materials used by these parties. Further, we may be required to indemnify our collaborators against all damages and other liabilities arising out of our development activities or products produced in connection with these collaborations.

Our headquarters and other facilities and certain manufacturers and suppliers are located in regions that are subject to natural disasters, as well as in some cases geopolitical risks and social upheaval.

Our Davis, California headquarters is located near a known earthquake fault. The impact of a major earthquake, fire or other natural disaster, including floods, on our Davis facilities, Bangor, Michigan manufacturing plant, infrastructure and overall operations is difficult to predict and any natural disaster could seriously disrupt our entire business process. In addition, Haven is produced by a third-party manufacturer in Florida in a location that could be impacted by hurricane activity, and certain of our raw materials are sourced in China, which is subject to risks associated with uncertain political, economic and other conditions such as the outbreak of contagious diseases, such as avian flu, swine flu and SARS, and natural disasters. The insurance we maintain may not be adequate to cover our losses resulting from natural disasters or other business interruptions. Although these risks have not materially adversely affected our business, financial condition or results of operations to date, there can be no assurance that such risks will not do so in the future.

Inability to comply with regulations applicable to our facilities and procedures could delay, limit or prevent our research and development or manufacturing activities.

Our research and development and manufacturing facilities and procedures are subject to continual review and periodic inspection. We must spend funds, time and effort in the areas of production, safety and quality control and assurance to ensure full technical compliance with the regulations applicable to these facilities and procedures. If the EPA or another regulatory body determines that we are not in compliance with these regulations, regulatory approval of our products could be delayed or we may be required to limit or cease our research and development or manufacturing activities or pay a monetary fine. If we are required to limit or cease our research and development activities, our ability to develop new products would be impaired. In addition, if we are required to limit or cease our manufacturing activities, our ability to produce our products in commercial quantities would be impaired or prohibited, which would harm our business.

We may be exposed to product liability and remediation claims, which could harm our business.

The use of certain bio-based pest management and plant health products is regulated by various local, state, federal and foreign environmental and public health agencies. These regulations may include requirements that only certified or professional users apply the product or that certain products be used only on certain types of locations, may require users to post notices on properties to which products have been or will be applied, may require notification to individuals in the vicinity that products will be applied in the future or may ban the use of certain ingredients. Even if we are able to comply with all such regulations and obtain all necessary registrations, we cannot provide assurance that our products will not cause injury to crops, the environment or people under all circumstances. For example, our products may be improperly combined with other pesticides or, even when properly combined, our products may be blamed for damage caused by these other pesticides. The costs of remediation or products liability could materially adversely affect our future quarterly or annual operating results.

We may be held liable for, or incur costs to settle, liability and remediation claims if any products we develop, or any products that use or incorporate any of our technologies, cause injury or are found unsuitable during product testing, manufacturing, marketing, sale or use. These risks exist even with respect to products that have received, or may in the future receive, regulatory approval, registration or clearance for commercial use. We cannot guarantee that we will be able to avoid product liability exposure.

We currently maintain product liability insurance at levels we believe are sufficient and consistent with industry standards for companies at our stage of development. We cannot guarantee that our product liability insurance is adequate and, at any time, it is possible that this insurance coverage may not be available on commercially reasonable terms or at all. A product liability claim could result in liability to us greater than our assets or insurance coverage. Moreover, even if we have adequate insurance coverage, product liability claims or recalls could result in negative publicity or force us to devote significant time and attention to those matters, which could harm our business.

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

As of December 31, 2017, we had approximately $216.0 million of federal operating loss carryforwards available to offset future taxable income, which expire in varying amounts beginning in 2026 if unused. As of December 31, 2017, we had approximately $179.1 million of state operating loss carryforwards available to offset future taxable income, which began expiring in 2016. It is possible that we will not generate taxable income in time to use these loss carryforwards before their expiration.

Section 382 of the Internal Revenue Code imposes restrictions on the use of a corporation’s net operating losses, as well as certain recognized built-in losses and other carryforwards, after an “ownership change” occurs. A Section 382 “ownership change” occurs if one or more stockholders or groups of stockholders who own at least 5% of our stock increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. Future issuances or sales of our stock (including certain transactions involving our stock that are outside of our control) could also result in an ownership change under Section 382. If an “ownership change” occurs, Section 382 would impose an annual limit on the amount of pre-change net operating losses and other losses we can use to reduce our taxable income generally equal to the product of the total value of our outstanding equity immediately prior to the “ownership change” (subject to certain adjustments) and the long-term tax-exempt interest rate for the month of the “ownership change.” The applicable rate for ownership changes occurring in the month of December 2017 was 1.96%.

Because U.S. federal net operating losses generally may be carried forward for up to 20 years, the annual limitation may effectively provide a cap on the cumulative amount of pre-ownership change losses, including certain recognized built-in losses that may be utilized. Such pre-ownership change losses in excess of the cap may be lost. In addition, if an ownership change were to occur, it is possible that the limitations imposed on our ability to use pre-ownership change losses and certain recognized built-in losses could cause a net increase in our U.S. federal income tax liability and U.S. federal income taxes to be paid earlier than otherwise would be paid if such limitations were not in effect. Further, if the amount or value of these deferred tax assets is reduced, such reduction would have a negative impact on the book value of our common stock.

We completed a Section 382 analysis as of December 31, 2013 and concluded that approximately $0.5 million in federal net operating losses and approximately $0.2 million in federal research and development credits are expected to expire prior to utilization as a result of our previous ownership changes and corresponding annual limitations. We have not conducted an analysis to determine the amount of state net operating losses that are also expected to expire prior to utilization. Our existing net operating loss carryforwards or credits may be subject to significant limitations due to events occurring since December 31, 2013, and we have not updated our Section 382 analysis to consider events since December 31, 2013, including the effect of issuing common stock pursuant to a public offering in June 2014. Our inability to use these net operating loss carryforwards as a result of the Section 382 limitations could harm our financial condition.

Our business is subject to various governmental regulations, and compliance with these regulations may cause us to incur significant expenses. If we fail to maintain compliance with applicable regulations, we may be forced to recall products and cease their manufacture and distribution, which could subject us to civil or criminal penalties.

The complex legal and regulatory environment exposes us to compliance and litigation costs and risks that could materially affect our operations and financial results. These laws and regulations may change, sometimes significantly, as a result of political or economic events. They include environmental laws and regulations, tax laws and regulations, import and export laws and regulations, government contracting laws and regulations, labor and employment laws and regulations, securities and exchange laws and regulations, and other laws such as the Foreign Corrupt Practices Act. In addition, proposed laws and regulations in these and other areas could affect the cost of our business operations. We face the risk of changes in both domestic and foreign laws regarding trade, potential loss of proprietary information due to piracy, misappropriation or foreign laws that may be less protective of our intellectual property rights. Violations of any of these laws and regulations could subject us to criminal or civil enforcement actions, any of which could have a material adverse effect on our business, financial condition or results of operations.

Risks Related to Ownership of our Common Stock

Our stock price has in the past and may in the future fail to meet minimum requirements for continued listing on The Nasdaq Capital Market. Our ability to publicly or privately sell equity securities and the liquidity of our common stock could be adversely affected if we are delisted from The Nasdaq Capital Market or if we are unable to transfer our listing to another stock market.

In the past we have received written notifications from Nasdaq informing us that we were not in compliance with certain continued listing requirements of The Nasdaq Stock Market LLC ("Nasdaq"). As previously disclosed, on January 2, 2018, we received written notice from the Listing Qualifications Department of Nasdaq indicating that we were not in compliance with the rules for continued listing because we had not yet held an annual meeting of shareholders within twelve months of the end of our 2016 fiscal year end. As a result of our holding the 2017 Annual Meeting on January 31, 2018, we regained compliance with the applicable rule. There can be no assurance that we will continue to maintain compliance with the requirements for listing our common stock on Nasdaq. Delisting from Nasdaq could adversely affect our ability to raise additional financing through the public or private sale of equity securities, would significantly affect the ability of investors to trade our securities and would negatively affect the value and liquidity of our common stock. Delisting could also have other negative results, including the potential loss of confidence by employees, the loss of institutional investor interest and fewer business development opportunities.

Our principal stockholders will have significant voting power and may take actions that may not be in the best interest of other stockholders.

As of March 26, 2018, our executive officers and directors and their affiliates, including Ospraie Ag Science LLC ("Ospraie"), beneficially owned or controlled, directly or indirectly, an aggregate of approximately 64.1 million shares, or 47.7% of our common stock. In addition, affiliates of Waddell & Reed Financial Inc. ("Waddell"), beneficially own 27.1% of our common stock, and Ardsley Advisory Partners ("Ardsley") owns 14.6% of our common stock. Further, affiliates of Ospraie, Waddell and Ardsley, together with our Chief Executive Officer, Dr. Pamela Marrone, have entered into a voting and lock-up agreement, pursuant to which each agreed to vote their existing shares of our Common Stock in favor of the election of up to two directors designated by Ospraie at our 2018 Annual Meeting of Stockholders, subject to certain conditions and limitations. If all of these security holders act together, they will be able to exert significant control over our management and affairs, which could result in some corporate actions that our other stockholders do not view as beneficial such as failure to approve change of control transactions that could offer holders of our common stock a premium over the market value of our company. As a result, the market price of our common stock could be adversely affected.

Our common stock may experience extreme price and volume fluctuations, and you may not be able to resell shares of our common stock at or above the price you paid.

We have had a history of losses, and our business, financial results and stock price have been adversely affected by matters related to our 2015 financial restatement and, prior to the February 2018 Financing Transactions, concerns regarding our ability to continue operations. Since shares of our common stock were sold in our initial public offering in August 2013 at a price of $12.00 per share, our stock price has ranged between $0.60 and $20.00 through December 31, 2017. The trading price of our common stock will likely continue to be highly volatile and could be subject to wide fluctuations in price in response to various factors, some of which are beyond our control. These factors include:

- our small public float relative to the total number of shares of common stock that are issued and outstanding;
- quarterly variations in our results of operations, those of our competitors or those of our customers;
- announcements of technological innovations, new products or services or new commercial relationships by us or our competitors;
- our ability to develop and market new products on a timely basis;
- disruption to our operations;
- media reports and publications about our financials or about pest management products;
- announcements concerning our competitors or the pest management industry in general;
- our entry into, modification of or termination of key license, research and development or collaborative agreements;
- new regulatory pronouncements and changes in regulatory guidelines or the status of our regulatory approvals;
- general and industry-specific economic conditions;
- any major change in our board of directors or management;
- the commencement of, or our involvement in, litigation;
- changes in financial estimates, including our ability to meet our future net revenues and operating profit or loss projections; and
- changes in earnings estimates or recommendations by securities analysts.

Substantial future sales of our common stock, or the perception in the public markets that these sales may occur, may depress our stock price.

Sales of substantial amounts of our common stock in the public market, or the perception that such sales could occur, could adversely affect the market price of our common stock. As of March 26, 2018, we had approximately 102.1 million shares of common stock outstanding, 31.7 million which were held by our directors and officers and their affiliates and an additional 52.9 million shares which were held by other beneficial holders of 5% or more of our common stock. Although these shares are subject in some cases to volume and manner of sale restrictions of Rule 144 of the Securities Act, any determination by holders of a substantial number of such shares to sell our stock, or the perception that such sales may occur, could cause our stock price to decline.

In addition, as of March 26, 2018, we had 4.9 million shares of our common stock available to be awarded under our equity incentive plans, 0.9 million shares of our common stock issuable upon the settlement outstanding restricted stock units, 5.4 million shares of our common stock issuable upon the exercise of outstanding options with a weighted average exercise price of $3.92 per share and 52.7 million shares of our common stock issuable upon the exercise of outstanding warrants with a weighted average exercise price of $1.10 per share. These shares may be sold in the public market upon issuance.

Because we have no plans to pay dividends on our common stock, investors must look solely to stock appreciation for a return on their investment in us.

We have never declared or paid any cash dividends on our common stock, and we do not anticipate paying any cash dividends on our common stock in the foreseeable future. We currently intend to retain all future earnings to fund the development and growth of our business. Any payment of future dividends will be at the discretion of our board of directors and will depend on, among other things, our earnings, financial condition, capital requirements, level of indebtedness, statutory and contractual restrictions applying to the payment of dividends and other considerations that the board of directors deems relevant. Investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize a return on their investment. Investors seeking cash dividends should not purchase our common stock.

We are an "emerging growth company" and we cannot be certain if the reduced disclosure requirements applicable to emerging growth companies will make our common stock less attractive to investors.

We are an "emerging growth company" as defined in the JOBS Act. For as long as we continue to be an emerging growth company, we may choose to take advantage of certain exemptions from various reporting requirements applicable to other public companies but not to emerging public companies, which include, among other things:

- exemption from the auditor attestation requirements under Section 404 of the Sarbanes-Oxley Act of 2002;
- reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements;
- exemption from the requirements of holding non-binding stockholder votes on executive compensation arrangements; and
- exemption from any rules requiring mandatory audit firm rotation and auditor discussion and analysis and, unless the SEC otherwise determines, any future audit rules that may be adopted by the Public Company Accounting Oversight Board.

We could be an emerging growth company until the last day of the fiscal year following the fifth anniversary after our initial public offering, or until the earliest of (i) the last day of the fiscal year in which we have annual gross revenues of $1.7 billion or more; (ii) the date on which we have, during the previous three year period, issued more than $1.0 billion in non-convertible debt; or (iii) the date on which we are deemed to be a large accelerated filer under the federal securities laws. We will qualify as a large accelerated filer as of the first day of the first fiscal year after we have (i) more than $700.0 million in outstanding common equity held by our non-affiliates and (ii) been public for at least 12 months. The value of our outstanding common equity will be measured each year on the last day of our second fiscal quarter.

Under the JOBS Act, emerging growth companies are also permitted to elect to delay adoption of new or revised accounting standards until companies that are not subject to periodic reporting obligations are required to comply, if such accounting standards apply with non-reporting companies. We have made an irrevocable decision to opt out of this extended transition period for complying with new or revised accounting standards.

We cannot predict if investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We incur significant costs as a result of operating as a public company, and our management is required to devote substantial time to comply with the laws and regulations affecting public companies, which costs will increase after we are no longer an "emerging growth company."

As a public company, we incur significant legal, accounting and other expenses, including costs associated with public company reporting and corporate governance requirements, in order to comply with the rules and regulations imposed by the Sarbanes-Oxley Act, as well as rules implemented by the SEC and Nasdaq. Such costs will increase after we cease to qualify as an emerging growth company. Our management and other personnel have needed to devote a substantial amount of time to these compliance initiatives, and our legal and accounting compliance costs have increased. We also may need to hire additional staff or consultants in the areas of investor relations, legal and accounting to continue to operate as a public company. The expenses incurred by public companies for reporting and corporate governance purposes have increased dramatically over the past several years. We expect these rules and regulations to continue to increase our legal and financial compliance costs substantially and to make some activities more time consuming and costly. We are currently unable to estimate these costs with any degree of certainty. Greater expenditures may be necessary in the future with the advent of new laws and regulations pertaining to public companies. We also expect that, as a public company, it will continue to be expensive for us to obtain directors' and officers' liability insurance.

The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal control over financial reporting and disclosure controls and procedures. In particular, as a public company, we are required to perform system and process evaluations and testing of our internal control over financial reporting to allow management to report on the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. As described above, as an emerging growth company, we are not yet required to comply with the auditor attestation provisions of Section 404. However, we are required to comply with management attestations of Section 404, and our testing, or the subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal control over financial reporting that are deemed to be material weaknesses. We expect to incur substantial accounting expense and management time on compliance-related issues with respect to Section 404. Moreover, if we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm identify deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, we could lose investor confidence in the accuracy and completeness of our financial reports, which could cause our stock price to decline.

For example, in September 2014, our Audit Committee initiated an independent investigation regarding certain accounting matters concerning recognition of revenue in a sales transaction. As a result of the matters relating to the Audit Committee's independent investigation, we announced that certain of our previously filed financial statements could no longer be relied upon and subsequently completed a restatement. While we believe we have appropriately determined the errors made in our previously reported consolidated financial statements, recorded the correct adjustments in preparing our restated consolidated financial statements and remediated the material weaknesses identified in our internal control over financial reporting related to the subject matter of the Audit Committee's independent investigation, we can provide no assurances that other material weaknesses in our internal control over financial reporting, such as the material weakness we have identified with respect to stock option grants, will not be identified in the future.

Unforeseen problems with the implementation and maintenance of our information systems , or failure to design and operate effective internal controls over information systems, could have an adverse effect on our operations and could result in ineffective internal control over our financial reporting .

In fourth quarter of 2016, we began the process of implementing a cloud-based enterprise resource planning ("ERP") system. During the second quarter of fiscal 2017, we transitioned to our ERP system for manufacturing operations for material requirements planning, general ledger, procurement, payment, billings and cash receipts functions. This transition, including our engagement of third party experts to help in the design, training and implementation of the new ERP system, has accounted for increases in sales, general and administrative costs, relative to prior periods. As we add functionality and increase the use of the ERP system, we will incur additional costs and problems could arise that we have not foreseen, including interruptions in service, loss of data, or reduced functionality. Such problems could adversely impact our ability to provide quotes, take customer orders, and otherwise run our business in a timely manner. In addition, if our new systems fail to provide accurate and increased visibility into pricing and cost structures, it may be difficult to improve or maximize our profit margins. As such, our results of operations and cash flows could be adversely affected.

In addition, we do not have experience with implementing and maintaining controls over this ERP system. While we believe we have designed the appropriate controls around this ERP system, if we have not designed controls within or around these systems that are effective at preventing and detecting unreliable data, or if we are unable to design or operate controls within or around these systems to provide effective control around program changes and access to the systems, we may be at risk for future material weaknesses. The existence of a material weakness could result in errors in our financial statements that could result in a restatement of financial statements, which could cause us to fail to meet our reporting obligations, to be in breach of agreements with our lenders and equity inventor, lead to a loss of investor confidence and have a negative impact on the trading price of our common stock.

We have in the past identified material weaknesses, and if we fail to establish and maintain proper and effective internal controls, our ability to produce accurate financial statements on a timely basis could be impaired, which could adversely affect our consolidated operating results, our ability to operate our business, our stock price and investors' views of us.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to ensure that information regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. As previously noted under Risk Factors "— We incur significant costs as a result of operating as a public company, and our management is required to devote substantial time to comply with the laws and regulations affecting public companies, which costs will increase after we are no longer an 'emerging growth company,'" based on the Audit Committee's independent investigation, management identified material weaknesses in internal control over financial reporting as of December 31, 2014 resulting in revenue transactions that were recognized prior to satisfaction of all required revenue recognition criteria. We developed and implemented a plan to remediate these material weaknesses, which focused on continued training for and communication with employees regarding our enhanced policies and procedures, and have determined that these material weaknesses were remediated as of December 31, 2015.

Also in connection with management's assessment of our internal control over financial reporting, management identified an additional deficiency that constituted a material weakness in our internal control over financial reporting as of December 31, 2014 in our governance practices related to ineffective controls over the timeliness and accuracy of documentation related to actions of our board of directors and compensation committee specific to approving stock option grants. While no financial statement accounts or disclosures were misstated, the potential impact could have led to a material misstatement. We developed and implemented a plan to conduct training with our legal department and those charged with governance, and had determined that this material weakness was remediated as of December 31, 2016. In addition, as discussed further under Part II—Item 9A—"Controls and Procedures," we have identified a deficiency related to disclosure controls and a material weakness in our internal controls over financial reporting as of December 31, 2017 related to the accounting for embedded derivative instruments that were a part of certain loan instruments that we entered into during the year ended December 31, 2017. We are developing and implementing a plan to remediate this material weakness.

Remedying our material weaknesses has required substantial management time and attention, and ensuring that we have adequate internal control over financial reporting and procedures in place to produce accurate financial statements on a timely basis will continue to be a costly and time consuming effort. Any failure to implement effective internal control over financial reporting or to complete and maintain the remediation of our identified control deficiencies may result in additional errors, material misstatements or delays in our financial reporting, failure to meet our financial reporting obligations or failure to avoid or detect fraud in our financial reporting. This in turn would have a material adverse effect on our business and results of operations and could have a substantial adverse impact on the trading price of our common stock and our relationships with customers and suppliers.

Our management does not expect that our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within the Company will have been detected. As discussed in this Annual Report on Form 10-K, our Audit Committee and management have identified control deficiencies in the past and may identify additional deficiencies in the future.

Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable.

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

- the right of our board of directors to elect directors to fill a vacancy created by the expansion of our board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- the establishment of a classified board of directors requiring that only a subset of the members of our board of directors be elected at each annual meeting of stockholders;
- the prohibition of cumulative voting in our election of directors, which would otherwise allow less than a majority of stockholders to elect director candidates;
- the requirement that stockholders provide advance notice to nominate individuals for election to our board of directors or to propose matters that can be acted upon at a stockholders' meeting. These provisions may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company;
- the ability of our board of directors to issue, without stockholder approval, shares of undesignated preferred stock with terms set by the board of directors, which rights could be senior to those of our common stock. The ability to authorize undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us;
- the ability of our board of directors to alter our bylaws without obtaining stockholder approval;
- the inability of our stockholders to call a special meeting of stockholders and to take action by written consent in lieu of a meeting;
- the required approval of the holders of at least two-thirds of the shares entitled to vote at an election of directors to adopt, amend or repeal our bylaws;
- the required approval of the holders of at least two-thirds of the shares entitled to vote at an election of directors to repeal or adopt any provision of our certificate of incorporation regarding the election of directors;
- the required approval of the holders of at least 80% of such shares to amend or repeal the provisions of our bylaws regarding the election and classification of directors; and
- the required approval of the holders of at least two-thirds of the shares entitled to vote at an election of directors to remove directors without cause.

As a Delaware corporation, we are also subject to certain Delaware anti-takeover provisions. Under Delaware law, a corporation may not engage in a business combination with any holder of 15% or more of its common stock unless the holder has held the stock for three years or, among other things, the board of directors has approved the transaction. Our board of directors could rely on Delaware law to prevent or delay an acquisition of us.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our headquarters are located at 1540 Drew Avenue in Davis, California, in a facility consisting of approximately 27,300 square feet of office, laboratory and greenhouse space under a lease entered into in September 2013. This facility accommodates our research, development, sales, marketing, operations, finance and administrative activities. The facility includes a new, state-of-the-art fermentation lab and pilot plant, an expanded formulation lab and pilot with spray drying and granulation capabilities, an insectary, a plant pathology and nematology lab and a plant and weed sciences lab, among others. The initial term of the lease is for a period of 60 months and commenced in August 2014. In January 2016, the Company entered into an agreement with a sublessee to sublease approximately 3,800 square feet of vacant office space located in this facility pursuant to the terms of our lease agreement. The initial term of the sublease is for a period of approximately 43 months and commenced in February 2016.

We also purchased an 11,400 square-foot manufacturing facility in Bangor, Michigan, in July 2012, which we have repurposed to accommodate large-scale manufacturing of our products. We believe that our leased facilities and our manufacturing facility are adequate to meet our needs.

ITEM 3. LEGAL PROCEEDINGS

From time to time we may be involved in litigation that we believe is of the type common to companies engaged in our line of business, including intellectual property and employment issues. While the outcome of these other claims cannot be predicted with certainty, we do not believe that the outcome of any of these other legal matters will have a material adverse effect on our results of operations, financial condition or cash flows.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Market Information for Common Stock

Our common stock was been listed on the NASDAQ Global Market under the symbol "MBII" from August 2, 2013 through September 5, 2016. Since September 6, 2016, our common stock has been listed on the Nasdaq Capital Market. Prior to that time, there was no public market for our stock. The following table sets forth for the indicated periods the high and low intra-day sales prices per share for our common stock on the NASDAQ Global Market or Nasdaq Capital Market, as applicable, with respect to the periods set forth above.

	HIGH	LOW
2017		
First Quarter	$ 2.45	$ 1.66
Second Quarter	$ 2.12	$ 0.90
Third Quarter	$ 1.36	$ 0.85
Fourth Quarter	$ 1.23	$ 0.85
2016		
First Quarter	$ 1.65	$ 0.62
Second Quarter	$ 0.97	$ 0.60
Third Quarter	$ 1.92	$ 0.71
Fourth Quarter	$ 2.79	$ 1.61

Holders of Record

As of December 31, 2017, there were 67 stockholders of record of our common stock, and the closing price of our common stock was $1.10 per share as reported on the Nasdaq Capital Market. Because some of our shares of common stock are held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of stockholders represented by these record holders.

Dividend Policy

We have never declared or paid any cash dividend on our common stock. We intend to retain any future earnings and do not expect to pay dividends in the foreseeable future.

Equity Compensation Plan Information

Information regarding equity compensation plans approved and not approved by stockholders is summarized in the following table as of December 31, 2017:

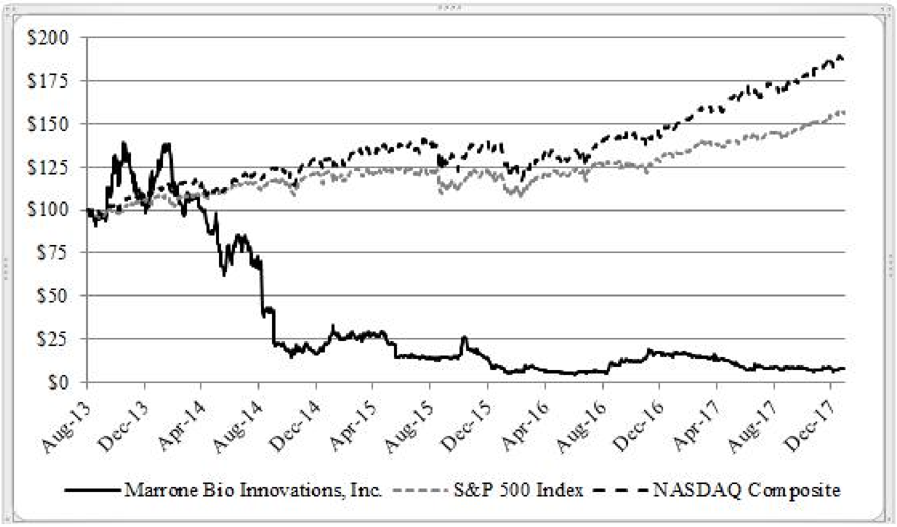
PLAN CATEGORY	NUMBER OF SECURITIES TO BE ISSUED UPON CONVERSION OF RESTRICTED STOCK UNITS AND EXERCISE OF OUTSTANDING OPTIONS, WARRANTS AND RIGHTS	WEIGHTED-AVERAGE EXERCISE PRICE OF OUTSTANDING OPTIONS, WARRANTS AND RIGHTS	NUMBER OF SECURITIES REMAINING AVAILABLE FOR FUTURE ISSUANCE UNDER EQUITY COMPENSATION PLANS (EXCLUDING SECURITIES REFLECTED IN COLUMN (a)) (1)
	(a)	(b)	
Equity compensation plans approved by stockholders	3,943,334	$ 5.45	2,341,134
Equity compensation plans not approved by stockholders	—	—	—
Total	3,943,334	$ 5.45	2,341,134

(1) Consists of shares available for issuance under our 2013 Stock Incentive Plan.

Stock Performance Graph

This performance graph shall not be deemed "soliciting material" or to be "filed" with the SEC for purposes of Section 18 of the Securities Exchange Act of 1934, as amended ("Exchange Act"), or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any filing of Marrone Bio Innovations, Inc. under the Securities Act of 1933, as amended, or the Exchange Act.

The following graph shows a comparison from August 2, 2013 (the date our common stock commenced trading on the Nasdaq Global Market) through December 31, 2017 of the cumulative total return for our common stock, the Standard & Poor's 500 Stock Index ("S&P 500 Index") and the Nasdaq Composite Index ("Nasdaq Composite"). The Company's common stock began trading on the Nasdaq Capital Market on September 6, 2016. The graph assumes that $100 was invested at the close of the market on August 2, 2013 in the common stock of Marrone Bio Innovations, Inc., the S&P 500 Index and the Nasdaq Composite, and data for the S&P 500 Index and the Nasdaq Composite assumes reinvestments of dividends. The stock price performance of the following graph is not necessarily indicative of future stock price performance.



ITEM 6. SELECTED FINANCIAL DATA

You should read the following selected consolidated financial data in connection with Part II-Item 7-"Management's Discussion and Analysis of Financial Condition and Results of Operations," and our consolidated financial statements and the related notes included in Part II-Item 8-"Financial Statements and Supplementary Data" in this Annual Report on Form 10-K.

The consolidated statements of operations data for each of the years ended December 31, 2017, 2016, and 2015 and the consolidated balance sheet data as of December 31, 2017 and 2016 are derived from our audited consolidated financial statements included in Part II-Item 8-"Financial Statements and Supplementary Data" in this Annual Report on Form 10-K. The consolidated statements of operations data for the years ended December 31, 2014 and 2013 and the consolidated balance sheet data as of December 31, 2015, 2014 and 2013 are derived from our audited consolidated financial statements that are not included in this Annual Report on Form 10-K. Our historical results are not necessarily indicative of our results in any future period.

Consolidated Statements of Operations Data:

	YEAR ENDED DECEMBER 31,				
	2017	2016	2015	2014	2013
	(In thousands, except per share data)				
Revenues:					
Product	$ 17,935	$ 13,715	$ 8,976	$ 7,750	$ 7,588
License	232	327	333	232	193
Related party	—	—	492	1,154	665
Total revenues	18,167	14,042	9,801	9,136	8,446
Cost of product revenues, including cost of product revenues to related parties of $0, $0, $254, $561, and $374 for the years ended December 31, 2017,2016, 2015, 2014, and 2013, respectively	10,528	9,522	9,256	9,438	7,243
Gross profit (loss)	7,639	4,520	545	(302)	1,203
Operating expenses:					
Research, development and patent	10,820	9,670	13,500	19,281	17,905
Selling, general and administrative	19,814	18,510	26,502	28,950	15,017
Total operating expenses	30,634	28,180	40,002	48,231	32,922
Loss from operations	(22,995)	(23,660)	(39,457)	(48,533)	(31,719)
Other income (expense):					
Interest income	1	37	51	59	49
Interest expense	(3,374)	(2,941)	(2,764)	(2,907)	(6,056)
Interest expense to related parties	(4,355)	(4,361)	(1,599)	—	—
Change in estimated fair value derivative liability(1)	(96)	—	—	—	6,717
Gain on extinguishment of debt	—	—	—	—	49
Other income (expense), net	(106)	(146)	41	(278)	(282)
Total other income (expense), net	(7,930)	(7,411)	(4,271)	(3,126)	477
Loss before income taxes	(30,925)	(31,071)	(43,728)	(51,659)	(31,242)
Income taxes	—	—	—	—	—
Net loss	(30,925)	(31,071)	(43,728)	(51,659)	(31,242)
Deemed dividend on convertible notes	—	—	—	—	(1,378)
Net loss attributable to common stockholders	$ (30,925)	$ (31,071)	$ (43,728)	$ (51,659)	$ (32,620)
Net loss per common share (2):					
Basic	$ (1.06)	$ (1.26)	$ (1.79)	$ (2.32)	$ (3.74)
Diluted	$ (1.06)	$ (1.26)	$ (1.79)	$ (2.32)	$ (4.25)
Weighted-average shares outstanding used in computing net loss per common share (2):					
Basic	29,235	24,617	24,469	22,314	8,731
Diluted	29,235	24,617	24,469	22,314	8,911

(1) Prior to the completion of the initial public offering, we accounted for the outstanding warrants exercisable into shares of our Series A, Series B and Series C convertible preferred stock and the outstanding warrants exercisable into a variable number of shares of common stock as liability instruments, as the Series A, Series B and Series C convertible preferred stock and the common stock into which these warrants were convertible were contingently redeemable upon the occurrence of certain events or transactions. In addition, convertible notes were accounted for at estimated fair value. The warrant instruments and convertible notes were adjusted to fair value at each reporting period with the change in fair value recorded in the consolidated statements of operations. These charges did not continue after the completion of the initial public offering as the preferred stock warrants were exercised and the convertible notes automatically converted into common stock in accordance with their terms upon the completion of the initial public offering. The common stock warrants were, in accordance with their terms upon the completion of the initial public offering, either automatically exercised for shares of common stock or represent the right to purchase a fixed number of shares. See Part II-Item 7-"Management's Discussion and Analysis of Financial Conditions and Results of Operations—Key Components of Our Results of Operations—Change in Estimated Fair Value of Financial Instruments and Deemed Dividend on Convertible Notes."

(2) Includes the effect of a 1-for-3.138458 reverse stock split, effective August 1, 2013.

Balance Sheet Data:

	DECEMBER 31,				
	2017	2016	2015	2014	2013
	(In thousands)				
Cash and cash equivalents	$ 786	$ 9,609	$ 19,838	$ 35,324	$ 24,455
Short-term investments	—	—	—	—	13,677
Working capital (deficit) (1)	(2,884)	11,626	23,144	23,521	44,221
Total assets	36,913	45,983	71,201	77,182	69,918
Debt and capital leases (net of unamortized discount)	60,263	58,002	58,496	24,327	14,972
Convertible notes	3,490	—	—	—	—
Derivative liability	674	—	—	—	—
Total liabilities	87,564	76,167	73,223	43,951	30,887
Convertible preferred stock	—	—	—	—	—
Total stockholders' equity (deficit)	(50,651)	(30,184)	(2,022)	33,231	39,031

(1) Working capital (deficit) is defined as total current assets minus total current liabilities.

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

You should read the following discussion of our financial condition and results of operations in connection with our consolidated financial statements and the related notes included in Part II-Item 8-"Financial Statements and Supplementary Data" in this Annual Report on Form 10-K. In addition to our historical consolidated financial information, the following discussion contains forward-looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materially from those discussed in the forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this Annual Report on Form 10-K, particularly in Part I-Item 1A-"Risk Factors."

Overview

We make bio-based pest management and plant health products. Bio-based products are comprised of naturally occurring microorganisms, such as bacteria and fungi, and plant extracts. Our current products target the major markets that use conventional chemical pesticides, including certain agricultural and water markets, where our bio-based products are used as alternatives for, or mixed with, conventional chemical products. We also target new markets for which (i) there are no available conventional chemical pesticides or (ii) the use of conventional chemical pesticides may not be desirable or permissible either because of health and environmental concerns (including for organically certified crops) or because the development of pest resistance has reduced the efficacy of conventional chemical pesticides. Six of seven of our current products, including our newest biological fungicide, Stargus/Amplitude, are approved by the United States Environmental Protection Agency ("EPA") and registered as "biopesticides." Our first non-EPA product is Haven, a plant health product, is a "biostimulant" which requires state registrations, but does not require EPA registration. We believe our current portfolio of EPA-approved and registered "biopesticide" products and our pipeline address the growing global demand for effective, efficient and environmentally responsible products to control pests, increase crop yields and reduce crop stress.

The agricultural industry is increasingly dependent on effective and sustainable pest management practices to maximize yields and quality in a world of increased demand for agricultural products, rising consumer awareness of food production processes and finite land and water resources. In addition, our research has shown that the global market for biopesticides is growing substantially faster than the overall market for pesticides. This demand is in part a result of conventional growers acknowledging that there are tangible benefits to adopting bio-based pest management products into integrated pest management ("IPM") programs, as well as increasing consumer demand for organic food. We seek to capitalize on these global trends by providing both conventional and organic growers with solutions to a broad range of pest management needs through strategies such as adding new products to our product portfolio, continuing to broaden the commercial applications of our existing product lines, leveraging growers' positive experiences with existing product lines, educating growers with on-farm product demonstrations and controlled product launches with key target customers and other early adopters. To that end, in March 2016 we entered into an agreement with Isagro USA to distribute Bio-Tam 2.0, a biofungicide for soil-borne disease control and grapevine trunk disease control that complements our existing products, particularly Regalia, in May 2017, we entered into an agreement with Jet Harvest Solutions to sell their contact biofungicide, Jet-Ag, in most regions of the United States, and we continue to launch new product lines, with first sales of Haven and Stargus/Amplitude in 2017. We believe this approach enables us to stay ahead of our competition in providing innovative pest management solutions, enhances our sales process at the distributor level and helps us to capture additional value from our products.

Our research and development efforts are focused on supporting existing commercial products, including Regalia, Grandevo, Venerate Majestene/Zelto, Haven and Stargus/Amplitude, with a focus on reducing cost of product revenues, further understanding the modes of action, manufacturing support and improving formulations. In addition, our internal efforts in development and commercialization are focused on two promising product candidates, MBI-601 (Ennoble) biofumigant, which is EPA-registered, and MBI-014 (formerly MBI-010), a bioherbicide. Simultaneously, we are seeking collaborations with third parties to develop and commercialize more early stage candidates on which we have elected not to expend significant internal resources given our reduced budget. We believe this prioritization plan, together with our competitive strengths, including our leadership in the biologicals industry, commercially available products, robust pipeline of novel product candidates, proprietary discovery and development processes and industry experience, position us for growth.

We sell our crop protection products to leading agrichemical customers while also working directly with growers to increase existing and generate new product demand. To date, we have marketed our bio-based pest management and plant health products for agricultural applications to U.S. growers, through distributors and our own sales force, and we have focused primarily on high value specialty crops such as grapes, citrus, tomatoes and leafy greens. A large portion of our sales are currently attributable to conventional growers who use our bio-based pest management products either to replace conventional chemical pesticides or enhance the efficacy of their IPM programs. In addition, a portion of our sales are attributable to organic farmers who cannot use conventional pesticides and have few alternatives for pest management. As we continue to demonstrate the efficacy of our bio-based pest management and plant health products on new crops or for new applications, we may either continue to sell our products through our in-house sales force or collaborate with third parties for distribution to select markets.

Although we have historically sold a significant majority of our products in the United States, expanding our international presence and commercialization is an important component of our growth strategy. Regalia, Venerate and Grandevo are currently available in select international markets under distribution agreements with major agrichemical companies or regional distributors. Currently, our plan is to focus first on countries where we can gain the fastest registration approval to permit product launches while also pursuing key countries and regions with the largest and fastest growing biopesticide and plant health product markets for specialty crops and selected row crops. We are working with regional or national distributors in key countries who have brand recognition and established customer bases and who can conduct field trials and grower demonstrations and lead or assist in regulatory processes and market development.

We currently market our water treatment product, Zequanox, directly to a selected group of U.S. power and industrial companies. Due to our prioritization plan, we have not committed sufficient resources to Zequanox in order to market it full-scale. We signed an exclusive distribution agreement with Solenis for in-pipe uses. In addition, we continue to work with state, federal and bi-national partners to further develop Zequanox in the Great Lakes/Upper Mississippi River Basin as a habitat restoration tool and potential harmful algal bloom management tool. We believe that Zequanox presents a unique opportunity for generating long-term revenue as there are limited water treatment options available to date, most of which are time-consuming, costly or subject to high levels of regulation. Our ability to generate significant revenues from Zequanox from in-pipe treatments is dependent on our ability to persuade customers to evaluate the costs of our Zequanox products compared to the overall cost, and environmental impact, of the chlorine treatment process, the primary current alternative to using Zequanox, rather than the cost of purchasing chemicals alone. In the fourth quarter of 2015, we implemented a new process at our manufacturing plant that reduced the cost of product revenues to be more competitive with other mussel treatment chemicals. Sales of Zequanox have remained lower than our other products due to our prioritization of crop protection business, the length of the treatment cycle, the longer sales cycle (the bidding process with utility companies and governmental agencies occurs on a yearly or multi-year basis), the unique nature of the treatment approach for each customer based on the extent of the infestation, and the design of their facility.

Although our initial EPA-approved master labels cover our products' anticipated crop-pest use combinations, we launch early formulations of our pest management and plant health products to targeted customers under commercial labels that list a limited number of crops and applications that our initial efficacy data can best support. We then gather new data from experiments, field trials and demonstrations, gain product knowledge and get feedback to our research and development team from customers, researchers and agricultural agencies. Based on this information, we enhance our products, refine our recommendations for their use in optimal IPM programs, expand our commercial labels and submit new product formulations to the EPA and other regulatory agencies. For example, we began sales of Regalia SC, an earlier formulation of Regalia, in the Florida fresh tomatoes market in 2008, while a more effective formulation of Regalia with an expanded master label, including listing for use in organic farming, was under review by the EPA. In 2011, we received EPA approval of a further expanded Regalia master label covering hundreds of crops and various new uses for applications to soil and through irrigation systems, and we recently expanded sales of Regalia in large-acre row crops as a plant health product, in addition to its beneficial uses as a fungicide. In January 2016, we launched a new formulation of Regalia that no longer contains a solvent that is difficult to source and may experience future regulatory restrictions. This new formulation of Regalia disperses better in water and is easier to mix and rinse from containers and spray equipment. In addition, in June 2016, we launched a new formulation of Grandevo, Grandevo WDG, which offers improved handling and better, more convenient packaging. The water dispersible granule mixes easily in spray tanks with no dust or foam, which saves valuable time in the preparation and application processes. Similarly, ongoing field development research on the microbe used in Venerate, one of our insecticide products, led to our October 2015 registration of Majestene as a nematicide. We believe we have opportunities to broaden the commercial applications and expand the use of our existing products lines to help drive significant growth for our company.

Our total revenues were $18.2 million, $14.0 million, and $9.8 million for the years ended December 31, 2017, 2016 and 2015, respectively, and have risen as growers have adopted our products and have used our products on an expanded number of crops. We generate our revenues primarily from product sales, which are principally attributable to sales of our Regalia, Grandevo and Venerate product lines, but which also included sales of Majestene, Zequanox, Bio-Tam 2.0, Haven, Stargus/Amplitude and Jet-Ag. Product sales have been affected in recent years by various factors, including the tenure of our former chief operating officer and departure of significant members of our sales staff in the third quarter of 2014, and subsequent turnover in our sales and marketing departments. Further, we believe that following the announcement of the matters relating to our restatement, some customers and potential customers were reluctant to do business with us until after we had reached a settlement with the SEC, which was achieved in February 2016, and we believe competitors were able to take advantage of these circumstances. In addition, we believe that prior to our February 2018 Financing Transactions, concerns and rumors regarding our ability to continue operations have impacted our ability to grow more robustly. Going forward, we believe our revenues will largely be impacted by weather, natural disasters and other factors affecting planting and growing seasons and incidence of pests and plant disease, and, accordingly, the decisions by our distributors, direct customers and end users about the types and amounts of pest management and plant health products to purchase and the timing of use of such products.

Since 2011, we have also recognized revenues from our strategic collaboration and distribution agreements, which amounted to $0.2 million, $0.3 million and $0.3 million for the years ended December 31, 2017, 2016 and 2015, respectively.

We currently rely, and expect to continue to rely, on a limited number of distributors for a significant portion of our revenues since we sell through highly concentrated, traditional distribution channels. Distributors to which 10% or more of our total revenues are attributable for any one of the periods presented consist of the following:

	CUSTOMER A	CUSTOMER B
Year ended December 31,		
2017	24%	2%
2016	25%	3%
2015	28%	10%

While we expect product sales to a limited number of distributors to continue to be our primary source of revenues, as we continue to develop our pipeline and introduce new products to the marketplace, we anticipate that our revenue stream will be diversified over a broader product portfolio and customer base.

Our cost of product revenues was $10.5 million, $9.5 million, and $9.3 million for the years ended December 31, 2017, 2016 and 2015, respectively. Cost of product revenues included $0.3 million of cost of product revenues to related parties for the year ended December 31, 2015. There was no cost of product revenues to related parties for the years ended December 31, 2017 or 2016. Cost of product revenues consists principally of the cost of inventory, which includes the cost of raw materials, and third party services and allocation of operating expenses of our manufacturing plant related to procuring, processing, formulating, packaging and shipping our products. Cost of product revenues also include charges recorded for write-downs of inventory and idle capacity at our manufacturing plant. We expect our cost of product revenues related to the cost of inventory to increase and cost of product revenues relating to write-downs of inventory and idle capacity of our manufacturing plant to decrease as we expand sales and increase production of our existing commercial products Regalia, Grandevo, Venerate, Majestene, Zequanox, Haven and Stargus. We expect to see a gradual increase in gross margin over the life cycle of each of our products as we improve production processes, gain efficiencies and increase product yields. These increases may be offset by additional charges for inventory write-downs and idle capacity at our manufacturing plant until overall volume in the plant increases significantly, however we are expecting these charges to decrease over time.

Our research, development and patent expenses have historically comprised a significant portion of our operating expenses, amounting to $10.8 million, $9.7 million, and $13.5 million for the years ended December 31, 2017, 2016 and 2015, respectively. We are seeking collaborations with third parties to develop and commercialize more early stage candidates, which we have elected not to expend significant resources on given our reduced budget.

Selling, general and administrative expenses incurred to establish and build our market presence and business infrastructure have generally comprised the remainder of our operating expenses, amounting to $19.8 million, $18.5 million, and $26.5 million for the years ended December 31, 2017, 2016 and 2015, respectively. We have been building a sales and marketing organization that provides for increased training and a better ability to educate and support customers and for our product development staff to undertake responsibility for technical sales support, field trials and demonstrations to promote sales growth. We expect that our selling, general and administrative expenses to remain approximately flat in all departments with the exception of sales and marketing. In 2018, we are increasing our marketing communications campaigns and putting more “boots on the ground”, which should increase grower demand, or pull-through, and develop new customers, as well as expand business with existing customers. In addition, for the years ended December 31, 2017, 2016 and 2015, we incurred $0.1 million, $0.1 million, and $7.7 million, respectively, in costs related to the Audit Committee’s independent investigation, which commenced in September 2014, and the subsequent restatement of our financial statements, net of insurance proceeds. In addition, in February 2016, we entered into a settlement agreement with the SEC with respect to the SEC’s investigation, which was principally related to the accounting and other matters that were initially identified by us and that led to the financial restatement completed by us on November 10, 2015. Under the terms of the settlement agreement, we paid a $1.75 million civil penalty in March 2016. We had previously recorded expenses of $1.75 million in our consolidated statements of operations for the year ended December 31, 2014 for an accrual of our estimate of the penalties arising from such enforcement action.

Historically, we have funded our operations from the issuance of shares of common stock, preferred stock, warrants and convertible notes, the issuance of debt and entry into financing arrangements, product sales, payments under strategic collaboration and distribution agreements and government grants, but we have experienced significant losses as we invested heavily in research and development. We expect to incur additional losses related to our investment in the continued development, expansion and marketing of our product portfolio.

In February 2018, we completed a private placement and debt refinancing transactions, which we refer to as the February 2018 Financing Transactions. Following the closing of those transactions, as of February 28, 2018, our cash and cash equivalents were approximately $14.9 million. In addition, as of February 28, 2018, the aggregate principal amounts outstanding under our debt agreements was approximately $17.6 million, with approximately $9.1 million of such principal accruing interest at a variable rate of 6.5% as per annum as of February 28, 2018 and which is repayable in monthly payments through June 2036, an aggregate of approximately $7.5 million of such principal accruing interest at 8% per annum, and which is repayable upon maturity in December 2022, and an aggregate of $1.1 million of such principal amount accruing interest at 12.8% per annum and which was repayable in March 2018.

Key Components of Our Results of Operations

Product Revenues

Product revenues consist of revenues generated primarily from sales to distributors, net of rebates and cash discounts. Product revenues, not including related party revenues, constituted 99%, 98% and 92% of our total revenues for the years ended December 31, 2017, 2016 and 2015, respectively. Product revenues in the United States, not including related party revenues, constituted 92%, 90% and 84% of our total revenues for the years ended December 31, 2017, 2016 and 2015, respectively.

In some cases, we recognize distributor revenue as title and risk of loss passes, provided all other revenue recognition criteria have been satisfied (the “sell-in” method). For certain sales to certain distributors, the revenue recognition criteria for distributor sales are not satisfied at the time title and risk of loss passes to the distributor; specifically, in instances where “inventory protection” arrangements were offered in the past to distributors that permitted these distributors to return to the Company certain unsold products, we consider the arrangement not to be fixed or determinable, and accordingly, revenue is deferred until products are resold to customers of the distributor (the “sell-through” method). The cost of goods sold associated with such deferral are also deferred and classified as deferred cost of product revenues in the consolidated balance sheets. For the years ended December 31, 2017, 2016 and 2015, 40%, 45% and 42%, respectively, of product revenues, not including related party revenues, were recognized on a sell-through basis. If cash is received from customers related to delivered product that may not represent a true sale, it is classified as customer refund liabilities in the consolidated balance sheets, and the related cost of inventory remains in inventory in the consolidated balance sheets until the product is returned or is resold to customers of the distributor and revenue is recognized.

Product Shipments

We believe that product shipments is a useful measure of our sales that illustrates the value of our product shipment volumes in a given period. As certain of our product revenues are recognized on a “sell-in” basis while others are recognized on a “sell-through” basis, we believe product shipments facilitates a comparison of our operating performance on a consistent basis from period-to-period and provides for a more complete understanding of factors and trends affecting our business. We define product shipments as product revenues, plus related party product revenues related to product shipments, plus, or minus, the incremental amount of deferred revenues accrued during the applicable period from the shipment of products. This calculation specifically excludes changes in deferred revenue related to license revenues and customer deposits.

License Revenues

License revenues generally consist of revenues recognized under our strategic collaboration and distribution agreements for exclusive distribution rights, either for Regalia, for other commercial products, or for our broader pipeline of products, for certain geographic markets or for market segments that we are not addressing directly through our internal sales force. Our strategic collaboration and distribution agreements generally outline overall business plans and include payments we receive at signing and for the achievement of certain testing validation, regulatory progress and commercialization events. As these activities and payments are associated with exclusive rights that we provide over the term of the strategic collaboration and distribution agreements, revenues related to the payments received are deferred and recognized as revenues over the term of the exclusive period of the respective agreements, which we estimate to be between 5 and 17 years based on the terms of the contract and the covered products and regions. For the years ended December 31, 2017, 2016 and 2015, license revenues constituted 1%, 2% and 3% of total revenues, respectively. As of December 31, 2017, including agreements with related parties discussed below, we had received an aggregate of $3.9 million in payments under our strategic collaboration and distribution agreements. In addition, there will be an additional $0.3 million in payments due on certain anniversaries of regulatory approval and an additional $1.1 million in payments under these agreements that we could potentially receive if certain testing validation, regulatory progress and commercialization events occur.

Related Party Revenues

Related party revenues consist of both product revenues and license revenues. Les Lyman, a former member of our board of directors, is the chairman and significant indirect shareholder of The Tremont Group, Inc., which purchases our products for further distribution and resale. In January 2016, Les Lyman resigned from our board of directors. Accordingly, revenue recognized for sales to The Tremont Group, Inc. subsequent to his resignation in January 2016 were not be included in related party revenues. For the year ended 2015, related party revenues constituted 5% of total revenues. For the years ended December 31, 2017 and 2016, there were no related party revenues. For the year ended December 31, 2015, 100% of related party revenue, was recognized on a sell-through basis.

Cost of Product Revenues and Gross Profit

Cost of product revenues consists principally of the cost of raw materials, including inventory costs and third-party services related to procuring, processing, formulating, packaging and shipping our products. As we have used our Bangor, Michigan manufacturing plant to produce certain of our products, cost of product revenues includes an allocation of operating costs including direct and indirect labor, productions supplies, repairs and maintenance, depreciation, utilities and property taxes. The amount of indirect labor and overhead allocated to finished goods is determined on a basis presuming normal capacity utilization. Operating costs incurred in excess of production allocations, considered idle capacity, are expensed to cost of product revenues in the period incurred rather than added to the cost of the finished goods produced. Cost of product revenues may also include charges due to inventory adjustments and reserves. In addition, costs associated with license revenues have been included in cost of product revenues as they have not been significant. Gross profit is the difference between total revenues and cost of product revenues. Gross margin is gross profit expressed as a percentage of total revenues.

We have entered into in-license technology agreements with respect to the use and commercialization of three of our commercially available product lines, Regalia, Grandevo and Zequanox, and certain products under development. Under these licensing arrangements, we typically make royalty payments based on net product revenues, with royalty rates varying by product and ranging between 2% and 5% of net sales, subject in certain cases to aggregate dollar caps. These royalty payments are included in cost of product revenues, but they have historically not been significant. The exclusivity and royalty provisions of these agreements are generally tied to the expiration of underlying patents. The patents for Regalia and Zequanox expired in 2017 and the in-licensed U.S. patent for Grandevo is expected to expire in 2024. There is, however, a pending in-licensed patent application relating to Grandevo, which could expire later than 2024 if issued. The licensed patents for Haven begin to expire in 2019. After the termination of these provisions, we may continue to produce and sell these products. While third parties thereafter may develop products using the technology under expired patents, we do not believe that they can produce competitive products without infringing other aspects of our proprietary technology, including pending patent applications related to Regalia, Grandevo, Zequanox, and Haven and we therefore do not expect the expiration of the patents or the related exclusivity obligations to have a significant adverse financial or operational impact on our business.

We expect to see increases in gross profit over the life cycle of each of our products as gross margins are expected to increase over time as production processes improve and as we gain efficiencies and increase product yields. While we expect margins to improve on a product-by-product basis, our overall gross margins may vary as we introduce new products. In particular, we may experience downward pressure on overall gross margins as we rollout Haven and Stargus/Amplitude and expand sales of Grandevo and Zequanox. Gross margin has been and will continue to be affected by a variety of factors, including plant utilization, product manufacturing yields, changes in production processes, new product introductions, product mix and average selling prices.

In July 2012, we acquired a manufacturing facility, which we repurposed for manufacturing operations. We began full-scale manufacturing using this facility in 2014. We continue to use third party manufacturers for Venerate, Majestene, Haven, and Stargus/Amplitude, and for spray-dried powder formulations of Grandevo and Zequanox. We expect gross margins to improve using this facility when sales volumes recover enough to reduce overhead and idle capacity charges from our facility.

Research, Development and Patent Expenses

Research, development and patent expenses include personnel costs, including salaries, wages, benefits and share-based compensation, related to our research, development and patent staff in support of product discovery and development activities. Research, development and patent expenses also include costs incurred for laboratory supplies, field trials and toxicology tests, quality control assessment, consultants and facility and related overhead costs.

Selling, General and Administrative Expenses

Selling, general and administrative expenses consist primarily of personnel costs, including salaries, wages, benefits and share-based compensation, related to our executive, sales, marketing, finance and human resources personnel, as well as professional fees, including legal and accounting fees, and other selling costs incurred related to business development and to building product and brand awareness. We create brand awareness through programs such as speaking at industry events, trade show displays and hosting local-level grower and distributor meetings. In addition, we dedicate significant resources to technical marketing literature, targeted advertising in print and online media, webinars and radio advertising. Costs related to these activities, including travel, are included in selling expenses. Our administrative expenses have increased in recent periods primarily as a result of becoming a public company and incurring significant costs in connection with the Audit Committee's independent investigation and subsequent restatement of our financial statements.

We expect selling, general, and administrative expenses to remain approximately flat in all departments with the exception of sales and marketing. In 2018, we are increasing our marketing communications campaigns and putting more "boots on the ground", which should increase grower demand, or pull-through, and develop new customers, as well as expand business with existing customers. For the years ended December 31, 2017, 2016 and 2015, we incurred $0.1 million, $0.1 million and $7.7 million, respectively, in costs related to the Audit Committee's independent investigation and the subsequent restatement of our financial statements, net of insurance proceeds. In February 2016, we entered into a settlement agreement with the SEC with respect to the SEC's investigation, which was principally related to the accounting and other matters that were initially identified by us in September 2014 and that led to the financial restatement completed by us on November 10, 2015. Under the terms of the settlement agreement, we paid a $1.75 million civil penalty in March 2016. We had previously recorded expenses of $1.75 million in our consolidated statements of operations for the year ended December 31, 2014 for an accrual of our estimate of the penalties arising from such enforcement action.

Interest Expense

We recognize interest expense on notes payable and other debt obligations. In June 2014, we entered into a $10.0 million promissory note with a variable interest rate that varies with the prime rate. Accordingly, our interest expense will increase as the prime rate increases. In August 2015, we issued and sold to affiliates of Waddell & Reed Financial, Inc. senior secured promissory notes in the aggregate principal amount of $40.0 million with a fixed interest rate of 8%, with respect to which $35.0 million of principal converted to equity in connection with the February 2018 Financing Transactions, leaving $5.0 million of principal outstanding. In November 2016, pursuant to an amendment to secured promissory notes issued in October 2012 and April 2013, the interest rate on these notes decreased from 18% to 14%. This decrease in interest was partially offset by the additional interest associated with the valuation of warrants to purchase 125,000 shares of our common stock in the amount of $0.2 million. The value of the warrants is treated as a discount to these notes, the maturity for which was extended to December 2022 in connection with the February 2018 Financing Transactions, in which $10 million of principal under such notes was converted to equity, leaving $2.5 million of principal outstanding, and the interest rate on the notes was further decreased from 14% to 8%. In March 2017, we entered into an invoice purchase agreement with LSQ Funding Group, L.C. ("LSQ"), which allows us to receive advances of up to $7.0 million against receivables sold to LSQ. In April 2017, we began to draw down the LSQ financing, and as of December 31, 2017, we had an outstanding balance of $1.2 million in secured borrowings. In August 2017, we entered into an equipment financing agreement in which we borrowed $0.5 million to purchase certain equipment that had previously been financed under a capital lease. There was no outstanding balance under the equipment financing agreement as of December 31, 2017. Through July 2017, we had equipment under capital leases, which resulted in interest expense over the lease term. In October 2017, we began to borrow funds pursuant to a convertible promissory note which provided for borrowings up to $6 million at the lender's sole discretion. As of December 31, 2017, the outstanding balance of this convertible note was $3.6 million, net of a $400 thousand discount, and the convertible note bore interest at a rate of 1% through December 31, 2017 and then 10% thereafter. All of the principal under this outstanding note converted to equity in connection with the February 2018 Financing Transactions. See Note 17 of the audited financial statements for further discussion of the status of the outstanding debt subsequent to December 31, 2017.

Interest Income

Interest income consists primarily of interest earned on cash balances. Our interest income will vary each reporting period depending on our average cash balances during the period and market interest rates.

Income Tax Provision

Since our inception, we have been subject to income taxes principally in the United States. We anticipate that as we further expand our sales into foreign countries, we will become subject to taxation based on the foreign statutory rates and our effective tax rate could fluctuate accordingly.

Income taxes are computed using the asset and liability method, under which deferred tax assets and liabilities are determined based on the difference between the financial statement and tax bases of assets and liabilities using enacted tax rates in effect during the year in which the differences are expected to affect taxable income. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized. As of December 31, 2017, based on the available information, it is more likely than not that our deferred tax assets will not be realized, and accordingly we have taken a full valuation allowance against all of our U.S. deferred tax assets.

As of December 31, 2017, we had net operating loss carryforwards for federal income tax reporting purposes of $216.0 million, which begin to expire in 2026, and California and other state net operating loss carryforwards of $134.3 million and $44.9 million, respectively, which will continue to expire in 2028. Additionally, as of December 31, 2017, we had federal research and development tax credit carryforwards of $2.3 million, which begin to expire in 2026, and state research and development tax credit carryforwards of $2.5 million, which have no expiration date.

Our ability to use our federal and state net operating loss carryforwards and federal and state tax credit carryforwards to reduce future taxable income and future taxes, respectively, may be subject to restrictions attributable to equity transactions that may have resulted in a change of ownership as defined by Internal Revenue Code Section 382. In the event we have had such a change in ownership, utilization of these carryforwards could be severely restricted and could result in significant amounts of these carryforwards expiring prior to benefitting us.

Results of Operations

The following table sets forth certain statements of operations data as a percentage of total revenues:

	YEAR ENDED DECEMBER 31,		
	2017	**2016**	**2015**
Revenues:			
Product	99%	98%	92%
License	1	2	3
Related party	—	—	5
Total revenues	100	100	100
Cost of product revenues(1)	58	68	94
Gross profit	42	32	6
Operating Expenses:			
Research, development and patent	60	69	138
Selling, general and administrative	109	132	270
Total operating expenses	169	201	408
Loss from operations	(127)	(169)	(402)
Other income (expense):			
Interest income	—	—	1
Interest expense	(19)	(21)	(28)
Interest expense to related parties	(24)	(31)	(16)
Change in estimated fair value of derivative liability	(1)	—	—
Other income (expense), net	(1)	(1)	—
Total other expense, net	(45)	(53)	(43)
Loss before income taxes	(172)	(222)	(445)
Income taxes	—	—	—
Net loss	(172)%	(222)%	(445)%

(1) Includes 0%, 0%, and 3% in cost of product revenues to related parties during the years ended December 31, 2017, 2016 and 2015, respectively. See Note 15 of our accompanying Notes to Consolidated Financial Statements included in Part II-Item 8-“Financial Statements and Supplementary Data” in this Annual Report on Form 10-K for further discussion.

Comparison of the Years Ended December 31, 2017, 2016 and 2015

Product Revenues

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
	(Dollars in thousands)		
Product revenues	$ 17,935	$ 13,715	$ 8,976
% of total revenues	99%	98%	92%

Product revenues increased by $4.2 million, or 31%, in 2017 compared to 2016 and $4.7 million, or 53%, in 2016 compared to 2015. Product revenues increased in 2017 compared to 2016 and in 2016 compared to 2015 due to an increase in sales across virtually all product offerings, as well as favorable product mix of higher priced product offerings. We believe product revenues also increased in 2016 compared to 2015 due to the improved relationships with customers.

License Revenues

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
	(Dollars in thousands)		
License revenues	$ 232	$ 327	$ 333
% of total revenues	1%	2%	3%

License revenues related to certain strategic collaboration and distribution agreements decreased $0.1 million or 29% in 2017 compared to 2016 and were flat in 2016 compared to 2015. The decrease in 2017 compared with 2016 was primarily due to certain revenue streams associated with licenses being fully amortized. License revenues do not comprise a significant portion of our total revenues.

Related Party Revenues

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
	(Dollars in thousands)		
Related party revenues	$ —	$ —	$ 492
% of total revenues	—%	—%	5%

There were no related party revenues during the years ended December 31, 2017 or 2016. Related party revenues decreased by $0.5 million, or 100%, in 2016 compared to 2015. In January 2016, Les Lyman resigned from our board of directors. Accordingly, revenue recognized from sales to The Tremont Group, Inc. subsequent to Mr. Lyman's resignation in January 2016 has not been included in related party revenues.

Cost of Product Revenues and Gross Profit

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
	(Dollars in thousands)		
Cost of product revenues	$ 10,528	$ 9,522	$ 9,256
% of total revenues	58%	68%	94%
Gross profit	7,639	4,520	545
% of total revenues	42%	32%	6%

Cost of product revenues increased by $1.0 million, or 11%, in 2017 compared to 2016 and increased by $0.3 million, or 3% in 2016 compared to 2015. Our gross margins increased to 42% in 2017 from 32% in 2016 and increased to 32% in 2016 from 6% in 2015. Cost of products decreased as a percentage of revenues, and gross margins increased in 2017 compared to 2016, primarily due to continued acceptance of our product offerings, a favorable mix of higher margin product offerings, and continued improved manufacturing and third party manufacturing efficiencies. Cost of product revenues decreased, as a percentage of revenues, and gross margin increased in 2016 compared to 2015, primarily due to increased plant utilization and other volume efficiencies achieved as a result of the increased revenue, as well as a favorable mix of higher margin product offerings. During 2016, manufacturing costs associated with plant utilization allocated to cost of product and not allocated to inventory decreased by $1.8 million compared to 2015.

Research, Development and Patent Expenses

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
	(Dollars in thousands)		
Research, development and patent	$ 10,820	$ 9,670	$ 13,500
% of total revenues	60%	69%	138%

Research, development and patent expenses increased by $1.2 million or 12%, in 2017 compared to 2016 and decreased by $3.8 million, or 28%, in 2016 compared to 2015. Research, development and patent expenses increased in 2017 over 2016 as the Company focused on increased field trial activities for new and existing products on a wider range of prospective crops. Research, development and patent expenses decreased in 2016 compared to 2015 primarily due to a decrease of $1.2 million in employee -related expenses, which consisted primarily of salaries, wages and share-based compensation, $2.3 million decrease in direct expenses and outside services due to a reduction in field test costs and regulatory field trials, and $0.4 million related to fixed costs, primarily depreciation.

Selling, General and Administrative Expenses

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
	(Dollars in thousands)		
Selling, general administrative expenses	$ 19,814	$ 18,510	$ 26,502
% of total revenues	109%	132%	270%

Selling, general, and administrative expenses increased $1.3 million, or 7%, in 2017 compared to 2016 and decreased $8.0 million, or 30%, in 2016 compared to 2015. The increase in 2017 primarily related to an increase in legal costs, associated with corporate transaction activities, the non-recurrence in 2017 of a $0.7 million credit realized in 2016 as a result of insurance recoveries related to the Company's restatement of our financial statements and litigation, and approximately $0.6 million of increased costs associated with outside services largely related to our new ERP system implementation, marketing consulting costs, and marketing costs associated with advertising data research. In addition, the Company incurred a non-cash write down on sale of approximately $0.4 million related to manufacturing assets in 2017. The $8.0 million decrease in expenses in 2016 compared to 2015 related primarily to a decrease of $7.0 million as a result of reduced outside services, accounting, consulting and legal fees related to the Audit Committee's independent investigation, the subsequent restatement of our financial statements and litigation, a $1.2 million decrease in employee related expenses, primarily salaries and equity-based compensation. These reductions were offset by an increase in travel and related expenses of $0.2 million.

Other Income (Expense), Net

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
	(Dollars in thousands)		
Interest income	$ 1	$ 37	$ 51
Interest expense	(3,374)	(2,941)	(2,764)
Interest expense to related parties	(4,355)	(4,361)	(1,599)
Change in estimated fair value of derivative liability derivative liability	(96)	—	—
Other income (expense) net	(106)	(146)	41
	$ (7,930)	$ (7,411)	$ (4,271)

Interest income did not change significantly for 2017 compared with 2016 or for 2016 compared to 2015. Interest expense increased $0.4 million in 2017 compared to 2016 and increased $0.2 million in 2016 compared to 2015. The increase in 2017 over 2016 was primarily due to interest related to accounts receivable sales to LSQ initiated in April of 2017 and carried throughout remainder of the year. The increase in 2016 compared to 2015 was primarily due to the increase in the interest rate on the October 2012 and April 2013 Secured Promissory Notes, which, which interest rate was later decreased, as further described in Note 6 of the audited financial statements. Interest expense to related parties was largely unchanged in 2017 compared to 2016 and increased $2.8 million in 2016 compared to 2015. The increase in related party interest expense during 2016 compared to 2015 was primarily due to the senior secured promissory notes being outstanding throughout 2016 and only a portion of 2015. In 2017, a convertible note was entered into of which a certain feature was valued as a derivate. An expense of $96 thousand was recognized related to the change in the underlying fair value of this feature from issuance to December 31, 2017. There were no comparable expenses recognized during 2016 or 2015. The increase in other income expense net did not change significantly for 2017, 2016, and 2015.

Seasonality and Quarterly Results

The level of seasonality in our business overall is difficult to evaluate as a result of our relatively short history of sales, our relatively limited number of commercialized products, our expansion into new geographical territories, the introduction of new products, the timing of introductions of new formulations and products and our recognition of revenue on both a "sell-in" and "sell-through" basis, depending on the transaction, and the impact of weather and climate change. It is possible that our business may become more seasonal, or experience seasonality in different periods, than anticipated, particularly if we expand into new geographical territories, add or change distributors or distributor programs or introduce new products with different applicable growing seasons, or if a more significant component of our revenue becomes comprised of sales of Zequanox, which has a separate seasonal sales cycle compared to our crop protection products. Notwithstanding any such seasonality, we expect substantial fluctuation in sales year over year and quarter over quarter as a result of a number of variables on which sales of our products are dependent. Weather conditions, natural disasters and other factors affect planting and growing seasons and incidence of pests and plant disease, and accordingly affect decisions by our distributors, direct customers and end users about the types and amounts of pest management and plant health products to purchase and the timing of use of such products. In addition, disruptions that cause delays by growers in harvesting or planting can result in the movement of orders to a future quarter, which would negatively affect the quarter and cause fluctuations in our operating results. For example, late snows and cold temperatures in the Midwestern and Eastern United States in the first and second quarters of 2014 delayed planting and pesticide and plant health applications, and the California drought in 2015 and the Northeast U.S. drought in 2016 affected fungicide sales and Hurricanes Irma and Maria affected Florida and Puerto Rico crops in the third quarter of 2017. Customers also may purchase large quantities of our products in a particular quarter to store and use over long periods of time or time their purchases to manage their inventories, which may cause significant fluctuations in our operating results for a particular quarter or year, and low commodity prices may discourage growers from purchasing our products in an effort to reduce their costs and increase their margins for a growing season.

The following tables set forth our unaudited quarterly consolidated statements of operations data in dollars and as a percentage of total revenues for each of the four quarters in fiscal years 2017 and 2016. We have prepared the quarterly consolidated statements of operations data on a basis consistent with the audited consolidated financial statements included in Part II-Item 8-"Financial Statements and Supplementary Data" in this Annual Report on Form 10-K. In the opinion of management, the financial information reflects all adjustments, consisting only of normal recurring adjustments, which we consider necessary for a fair presentation of this information. This information should be read in connection with the audited consolidated financial statements and related notes included in Part II-Item 8-"Financial Statements and Supplementary Data" in this Annual Report on Form 10-K. The results of operations for historical periods are not necessarily indicative of the results of operations for any future period.

Fiscal Year 2017:

	MARCH 31, 2017	JUNE 30, 2017	SEPTEMBER 30, 2017	DECEMBER 31, 2017
	(In thousands) (Unaudited)			
Revenues:				
Product	$ 4,096	$ 6,418	$ 4,161	$ 3,260
License	58	58	58	58
Related party	—	—	—	—
Total revenues	4,154	6,476	4,219	3,318
Cost of product revenues	2,279	3,966	2,492	1,791
Gross profit	1,875	2,510	1,727	1,527
Operating expenses:				
Research, development and patent	2,444	2,853	3,152	2,371
Selling, general and administrative	5,343	5,073	5,174	4,224
Total operating expenses	7,787	7,926	8,326	6,595
Loss from operations	(5,912)	(5,416)	(6,599)	(5,068)
Other income (expense):				
Interest income	1	0	0	0
Interest expense	(636)	(869)	(804)	(1065)
Interest expense to related parties	(1,074)	(1,085)	(1,098)	(1,098)
Change in estimated fair value of derivative liability instruments	—	—	—	(96)
Other income (expense), net	(8)	(15)	(29)	(54)
Total other expense	(1,717)	(1,969)	(1,931)	(2,313)
Income taxes	—	—	—	—
Net loss	$ (7,629)	$ (7,385)	$ (8,530)	$ (7,381)
Product Shipments (1)	$ 6,462	$ 5,672	$ 3,053	$ 3,834

(1) Product shipments is a supplemental measure of financial performance that is not required by, or presented in accordance with, generally accepted accounting principles ("GAAP"). We define product shipments as product revenues, plus related party revenues (excluding, if any, related party revenues not related to the shipment of products), plus the incremental amount of deferred revenues accrued during the applicable period from shipment of products. This calculation specifically excludes changes in deferred revenue related to license revenues and customer deposits, and is intended to approximate the total value of products sold and under contract for sale in a given period. Product shipments, as defined herein, may not be comparable to similarly titled measures used by other companies. Our management uses this non-GAAP financial measure in order to have comparable results to analyze sales performance from quarter to quarter. We have chosen to provide this supplemental information regarding our sales in a given period to investors to facilitate a meaningful evaluation of actual operating results on a comparable basis with historical results, including to track product adoption, and to assist investors in their valuation of the Company.

The following table presents a reconciliation of product revenues, the most directly comparable GAAP financial measure, to product shipments for the periods indicated below in thousands:

	Three Months Ended			
	March 31, 2017	June 30, 2017	September 30, 2017	December 31, 2017
Product revenues	$ 4,096	$ 6,418	$ 4,161	$ 3,260
Change in deferred product revenue and other(a)	2,366	(746)	(1,108)	574
Product shipments	$ 6,462	$ 5,672	$ 3,053	$ 3,834

(a) Change in deferred product revenue and other is defined as the increase in the amount of deferred product revenues accrued during the applicable period, less prior deferred product revenues recognized during the applicable period, excluding the change in deferred revenue associated with license fees and customer deposits. For the three months ended March 31, 2017, June 30, 2017, September 30, 2017 and December 31, 2017, deferred license revenues decreased $58,000 each quarter. In addition for the three months ended December 31, 2017, product shipments includes $161,000 in product shipments that were not recognized into product revenues because the customer had exceeded their credit limit.

	MARCH 31, 2017	JUNE 30, 2017	SEPTEMBER 30, 2017	DECEMBER 31, 2017
	(Unaudited)			
Revenues:				
Product	99%	99%	99%	98%
License	1	1	1	2
Related party	—	—	—	—
Total revenues	100	100	100	100
Cost of product revenues	55	61	59	54
Gross profit	45	39	41	46
Operating expenses:				
Research, development and patent	59	44	75	71
Selling, general and administrative	129	78	123	127
Total operating expenses	188	122	198	199
Loss from operations	(143)	(83)	(156)	(153)
Other income (expense):				
Interest income	—	—	—	—
Interest expense	(15)	(13)	(19)	(32)
Interest expense to related parties	(26)	(17)	(26)	(33)
Change in estimated fair value of derivative liability	—	—	—	(3)
Other income (expense), net	(0)	(0)	(1)	(2)
Total other expense	(41)	(30)	(46)	(70)
Income taxes	—	—	—	—
Net loss	(184)%	(113)%	(202)%	(222)%

Fiscal Year 2016:

	MARCH 31, 2016	JUNE 30, 2016	SEPTEMBER 30, 2016	DECEMBER 31, 2016
			(In thousands) (Unaudited)	
Revenues:				
Product	$ 2,577	$ 4,957	$ 3,549	$ 2,632
License	92	92	85	58
Related party	—	—	—	—
Total revenues	2,669	5,049	3,634	2,690
Cost of product revenues	2,269	3,118	2,493	1,642
Gross profit	400	1,931	1,141	1,048
Operating expenses:				
Research, development and patent	2,322	2,313	2,662	2,373
Selling, general and administrative	5,530	4,512	3,754	4,714
Total operating expenses	7,852	6,825	6,416	7,087
Loss from operations	(7,452)	(4,894)	(5,275)	(6,039)
Other income (expense):				
Interest income	15	10	8	4
Interest expense	(750)	(759)	(755)	(677)
Interest expense to related parties	(1,083)	(1,083)	(1,099)	(1,096)
Other income (expense), net	(6)	(57)	(81)	(2)
Total other expense	(1,824)	(1,889)	(1,927)	(1,771)
Income taxes	—	—	—	—
Net loss	$ (9,276)	$ (6,783)	$ (7,202)	$ (7,810)
Product Shipments (1)	$ 3,886	$ 4,169	$ 3,096	$ 5,215

(1) Product shipments is a supplemental measure of financial performance that is not required by, or presented in accordance with, generally accepted accounting principles ("GAAP"). We define product shipments as product revenues, plus related party revenues (excluding, if any, related party revenues not related to the shipment of products), plus the incremental amount of deferred revenues accrued during the applicable period from shipment of products. This calculation specifically excludes changes in deferred revenue related to license revenues and customer deposits, and is intended to approximate the total value of products sold and under contract for sale in a given period. Product shipments, as defined herein, may not be comparable to similarly titled measures used by other companies. Our management uses this non-GAAP financial measure in order to have comparable results to analyze sales performance from quarter to quarter. We have chosen to provide this supplemental information regarding our sales in a given period to investors to facilitate a meaningful evaluation of actual operating results on a comparable basis with historical results, including to track product adoption, and to assist investors in their valuation of the Company.

The following table presents a reconciliation of product revenues, the most directly comparable GAAP financial measure, to product shipments for the periods indicated below in thousands:

	Three Months Ended			
	March 31, 2016	June 30, 2016	September 30, 2016	December 31, 2016
Product revenues	$ 2,577	$ 4,957	$ 3,549	$ 2,632
Change in deferred product revenue(a)	1,309	(788)	(453)	2,583
Product shipments	$ 3,886	$ 4,169	$ 3,096	$ 5,215

(a) Change in deferred product revenue is defined as the increase in the amount of deferred product revenues accrued during the applicable period, less prior deferred product revenues recognized during the applicable period, excluding the change in deferred revenue associated with license fees and customer deposits. For the three months ended March 31, 2016, June 30, 2016, September 30, 2016 and December 31, 2016, deferred license revenues decreased $92,000, $92,000, $85,000 and $58,000, respectively. For the three months ended March 31, 2016, June 30, 2016, September 30, 2016 September 30, 2016 and December 31, 2016, customer deposits included in deferred revenues were $0, 943,000, $923,000 and $0, respectively.

	MARCH 31, 2016	JUNE 30, 2016	SEPTEMBER 30, 2016	DECEMBER 31, 2016
			(Unaudited)	
Revenues:				
Product	97%	98%	98%	98%
License	3	2	2	2
Related party	—	—	—	—
Total revenues	100	100	100	100
Cost of product revenues	85	62	69	61
Gross profit	15	38	31	39
Operating expenses:				
Research, development and patent	87	46	73	88
Selling, general and administrative	207	89	103	175
Total operating expenses	294	135	176	263
Loss from operations	(279)	(97)	(145)	(224)
Other income (expense):				
Interest income	1	0	0	0
Interest expense	(28)	(15)	(21)	(25)
Interest expense to related parties	(41)	(21)	(30)	(41)
Other income (expense), net	(0)	(1)	(2)	(0)
Total other expense	(68)	(37)	(53)	(66)
Income taxes	—	—	—	—
Net loss	(347)%	(134)%	(198)%	(290)%

Liquidity and Capital Resources

Since our inception, our operations have been financed primarily by net proceeds from public offerings of common stock and private placements of convertible preferred stock, convertible notes and promissory notes, and term loans, as well as proceeds from the sale of our products and payments under strategic collaboration and distribution agreements and government grants.

In the August 2013 IPO, we issued 5.5 million shares of our common stock (inclusive of 0.7 million shares of common stock sold upon the exercise of the underwriters' option to purchase additional shares). The public offering price of the shares sold in the offering was $12.00 per share. The total gross proceeds from the offering to us were $65.6 million, and after deducting underwriting discounts and commissions and offering expenses payable by us, the aggregate net proceeds received totaled $56.1 million.

In June 2014, we completed a public offering of 4.6 million shares of our common stock (inclusive of 0.7 million shares of common stock sold upon the exercise of the underwriters' option to purchase additional shares). The public offering price of the shares sold in the offering was $9.50 per share. The total gross proceeds from the offering to us were $43.5 million, and after deducting underwriting discounts and commissions and offering expenses payable by us, the aggregate net proceeds received totaled $39.9 million.

In June 2014, we also borrowed $10.0 million pursuant to a promissory note with a bank. This note requires us to maintain a deposit balance with the lender of $1.6 million. In addition, until we provide documentation that proceeds from the loan were used for construction of our manufacturing plant, proceeds from the loan will be maintained in a restricted deposit account. As of December 31, 2017, we had $0.5 million remaining in the restricted deposit account.

In August 2015, we issued and sold to affiliates of Waddell & Reed, Inc. ("Waddell") senior secured promissory notes in the aggregate principal amount of $40.0 million. The notes bear interest at a rate of 8% per annum payable semi-annually on June 30 or December 31 of each year, commencing on December 31, 2015, with $10.0 million payable three years from the closing, $10.0 million payable four years from the closing and $20.0 million payable five years from the closing. These notes required us to maintain a cash and cash equivalents balance of $15.0 million through May 31, 2016. On May 31, 2016, the terms of this note were amended to remove the minimum cash balance requirement. From the date of this agreement through May 31, 2016, $15,000,000 was recorded as restricted cash and included in non-current assets.

In December 2016, we filed a shelf a registration statement on Form S-3 with the SEC that provides for the sale and issuance of up to $50.0 million of our common stock, preferred stock, debt securities, warrants, rights and/or units, including the ability to sell up to $15.0 million of our common stock through an at-the-market program in accordance with an offering agreement we entered into with H.C. Wainwright. We began selling common shares under this registration statement in January 2017. As of December 31, 2017, we had sold 104,000 shares of common stock under at-the-market program at a weighted average exercise price of $2.22 per share for aggregate consideration of $0.2 million, and a total of $14.8 million remained available for sale under the at-the-market program and our shelf registration statement. In April 2017, using the shelf registration statement, the Company completed an underwritten public offering of 6,571,000 registered shares of its common stock (inclusive of 857,000 shares of its common stock to cover over-allotments). The public offering price of the shares sold in the offering was $1.40 per share. The total gross proceeds to the Company from the offering were approximately $9.2 million. As of December 31, 2017, a total of approximately $25.8 million remained available for sale under our shelf registration statement. After deducting underwriting discounts and commissions and estimated offering expenses payable by the Company, the aggregate net proceeds to the Company under the shelf registration statement totaled approximately $8.2 million.

In addition, in March 2017, we entered into an invoice purchase agreement with LSQ, pursuant to which LSQ may elect to purchase up to $7,000,000 of eligible customer invoices from us. Our obligations under the LSQ financing are secured by a lien on substantially all of the Company's personal property; such lien is first priority with respect to the Company's accounts receivable, inventory, and related property. In April 2017, we began to draw down the LSQ financing, and as of December 31, 2017, we had an outstanding balance of $1.2 million in secured borrowings.

In April 2017, we completed an underwritten public offering of 6,571,000 registered shares of its common stock (inclusive of 857,000 shares of its common stock to cover over-allotments). The public offering price of the shares sold in the offering was $1.40 per share. The total gross proceeds to the Company from the offering were approximately $9,200,000, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, the aggregate net proceeds to us totaled approximately $8,200,000.

In October 2017, the Company and Dwight W. Anderson (the "Anderson") entered into an unsecured convertible promissory note (the "October 2017 Convertible Note") in which the Company could borrow an aggregate amount of up to $6,000,000, at Anderson's sole discretion, due on October 23, 2020 (the "Maturity Date"). This note would bear interest at 1% through December 31, 2017 and 10% thereafter. Through December 22, 2017, this Note was convertible into shares of the Company's common stock at a rate of one share of common stock per $1.00 of converting principal or interest, rounded down to the nearest share with any fractional amounts cancelled, at the election of Anderson by delivery of written notice to the Company. Until January 31, 2018, conversion of all or part of this note was subject to certain limitations that were removed when the shareholders of the Company voted on that date to approve a related equity financing. In December 2017, the October 2017 Convertible Note was amended and restated. As part of this amendment, this note became secured debt. As of January 31, 2018, we had borrowed $6,000,000 under the October 2017 Convertible Note.

In December 2017, we entered into a securities purchase agreement (the "Purchase Agreement") with certain accredited investors named therein including Ospraie and Ardsley, pursuant to which the investors thereunder agreed, subject to the satisfaction of certain closing conditions, to purchase units consisting of shares of our common stock and warrants to purchase a shares of our common stock. Concurrently with the entry into the Purchase Agreement, the Company entered into amendments to the Waddell senior promissory notes and our secured promissory notes issued in October 2012 and April 2013 (the "October 2012 and April 2013 Promissory Notes"). In February 2018, we completed the transactions contemplated in the Purchase Agreement, the note amendments and certain related agreements, which resulted in:

- the issuance of an aggregate of 40,000,001 shares of our common stock and warrants to purchase an aggregate of 41,333,333 shares of our common stock to purchasers under the Purchase Agreement for an aggregate purchase price of $30.0 million, which includes conversion of all outstanding principal under the October 2017 Convertible Note;
- the conversion of $35.0 million aggregate principal amount of the Waddell notes into an aggregate of 20,000,000 shares of our common stock and warrants to purchase 4,000,000 shares of our common stock, such that $5.0 million of principal under such notes remained outstanding, in connection with which the maturity of such notes was extended to December 31, 2022, all interest payments under such notes was deferred to maturity on December 31, 2022, and Ospraie was granted a right of first refusal to acquire such notes;
- the conversion of $10.0 million aggregate principal amount of indebtedness outstanding under the October 2012 and April 2013 Promissory Notes to an aggregate of 5,714,285 shares of our common stock and warrants to purchase 1,142,856 shares of our common stock such that $2.45 million of principal under such notes remained outstanding, and in connection with which the maturity of such notes was extended to December 31, 2022, the interest was reduced from 14% to 8% and all interest payments under such notes were deferred to the maturity on December 31, 2022; and
- we issued 800,000 shares of common stock and warrants to purchase 2,017,143 shares of common stock to the placement agent that facilitated the foregoing transactions.

In sum, the completion of the February 2018 Financing Transactions resulted in the issuance of an aggregate of 70.5 million shares of common stock and warrants to purchase an aggregate of 48.9 million shares of common stock, the deleveraging of our balance sheet by reducing principal payments that were outstanding as of December 31, 2018 by $49 million, and the deferral of payment on $7.5 million of remaining outstanding debt until December 31, 2022.

As of December 31, 2017, our cash and cash equivalents totaled $0.8 million, and we had an additional $2.0 million of restricted cash that we are contractually obligated to maintain in accordance with our debt agreements, which are discussed further below. As of February 28, 2018, following the closing of the February 2018 Financing Transactions (as discussed in note 17 of the audited financial statements), our cash and cash equivalents were approximately $14.9 million. In addition, as of February 28, 2018, the aggregate principal amount outstanding under our debt agreements was approximately $17.6 million. We were out of compliance with certain covenant requirements associated with our loan from Five Star Bank. Five Star Bank waived their right to deem recurring losses, liquidity, going concern, and financial condition a material adverse change through April 3, 2019. Unless Five Star Bank extends its waiver of the applicable covenant, or we enter into strategic agreements that include significant cash payments upfront, significantly increase revenues from sales or raise additional capital through the issuance of equity, we will exceed the maximum debt-to-worth requirement under our promissory note with Five Star Bank at the expiration of the waiver on April 3, 2019. As of December 31, 2017, we had an accumulated deficit of $265.6 million, and we estimate that we will continue to incur losses, which will further increase our accumulated deficit.

Our historical operating results and negative working capital as of December 31, 2017 indicate substantial doubt exists related to our ability to continue as a going concern. However, we believe that our existing cash and cash equivalents of $0.7 million at December 31, 2017, expected revenues, the net proceeds from equity financing and debt conversions during the first quarter of 2018 (as discussed in Note 17), expected future debt or equity financings, and cost management as well as cost reductions will be sufficient to fund operations as currently planned through one year from the date of the issuance of these financial statements. We also anticipate securing additional sources of through equity and/or debt financings, collaborative or other funding arrangements with partners, or through other sources of financing, consistent with historic results. However, we cannot predict, with certainty, the outcome of its actions to grow revenues, to manage or reduce costs or to secure additional financing from outside sources on terms acceptable to us or at all. Further, we may continue to require additional sources of cash for general corporate purposes, which may include operating expenses, working capital to improve and promote our commercially available products, advance product candidates, expand international presence and commercialization, general capital expenditures and satisfaction of debt obligations. We have based our beliefs on assumptions and estimates that may prove to be wrong, and we could spend its available financial resources less or more rapidly than currently expected. The actions discussed above cannot be considered probable of occurring and mitigating the substantial doubt raised by our historical operating results and satisfying our estimated liquidity needs for 12 months from the issuance of the financial statements. If we become unable to continue as a going concern, we may have to liquidate our assets, and stockholders may lose all or part of their investment in our common stock.

Additional information regarding risks related to our capital and liquidity is described in this Annual Report filed on Form 10-K in Part I— Item 1A— "Risk Factors", which should be read in connection with this disclosure.

Since our inception, we have incurred significant net losses, and we expect to incur additional losses related to the continued development and expansion of our business. Our liquidity may be negatively impacted as a result of slower than expected adoption of our products. We have certain strategic collaboration and distribution agreements under which we receive payments for the achievement of certain testing validation, regulatory progress and commercialization events. As of December 31, 2017, we had received an aggregate of $3.9 million in payments under these agreements. In addition, there will be an additional $0.3 million in payments due on certain anniversaries of regulatory approval and an additional $1.1 million in payments under these agreements that we could potentially receive if the testing validation, regulatory progress and commercialization events occur.

We had the following debt arrangements in place as of December 31, 2017, in each case as discussed below (dollars in thousands):

DESCRIPTION	STATED ANNUAL INTEREST RATE		PRINCIPAL BALANCE (INCLUDING ACCRUED INTEREST)	PAYMENT/MATURITY
Promissory Notes (1)	14.00%	$	12,595	Monthly(6)/October 2018(7)
Promissory Note (2)	6.25%	$	9,126	Monthly/June 2036
Promissory Notes (3)	8.00%	$	41,622	Biannually(8)/August 2020
Secured Borrowings(4)	13.6%	$	1,286	Varies(9)/March 2018(10)
Converitble Promissory Notes(5)	1.00%	$	4,005	At maturity/October 2020

(1) See "—October 2012 and April 2013 Secured Promissory Notes."
(2) See "—June 2014 Secured Promissory Note."
(3) See "—August 2015 Senior Secured Promissory Notes."
(4) See "—LSQ Financing."
(5) See "—Convertible Secured Promissory Note."
(6) Monthly payments are interest only until maturity.
(7) In November 2016, the maturity date was extended to October 2018.
(8) Biannual payments are interest only until maturity with principal payments due in increments at three, four and five years from the closing date.
(9) Payable through the lender's direct collection of certain accounts receivable through March 2018.
(10) This financing terminates in March 2018, but automatically extends if the Company does not provide written notice of termination. The lender can terminate this agreement with 30 days written notice. See the further discussion in "LSQ Financing."

October 2012 and April 2013 Secured Promissory Notes

On October 2, 2012, we borrowed $7,500,000 pursuant to senior notes ("October 2012 Secured Promissory Notes") with a group of lenders. On April 10, 2013 ("Conversion Date"), we entered into an amendment to increase, by up to $5,000,000, the amount available under the terms of the loan agreement with respect to the October 2012 Secured Promissory Notes. Under this amendment, an additional $4,950,000 was issued in partial consideration for $3,700,000 in cash received and in partial conversion for the cancellation of a $1,250,000 subordinated convertible note (collectively, "April 2013 Secured Promissory Notes"). The total amount borrowed under the amended loan agreement for the October 2012 Secured Promissory Notes and the April 2013 Secured Promissory Notes increased from $7,500,000 to $12,450,000 as of the Conversion Date. The October 2012 and April 2013 Secured Promissory Notes bore interest at 14% at December 31, 2017. This loan is collateralized by substantially all of the Company's assets. Pursuant to an amendment entered into in December 2017, in connection with the February 2018 Financing Transactions, $10.0 million aggregate principal amount of indebtedness outstanding under the October 2012 and April 2013 Promissory Notes converted to an aggregate of 5,714,285 shares of our common stock and warrants to purchase 1,142,856 shares of our common stock, such that $2.45 million of principal under such notes remained outstanding, the maturity of the such notes was extended to December 31, 2022, the interest was reduced from 14% to 8% and all interest payments under such notes were deferred to the maturity on December 31, 2022

June 2014 Secured Promissory Note

In June 2014, we borrowed $10,000,000 pursuant to a business loan agreement and promissory note ("June 2014 Secured Promissory Note") with Five Star Bank ("Five Star Bank") which bears interest at 6.25% as of September 30, 2017. The interest rate is subject to change and is based on the prime rate plus 2.00% per annum. The September 2014 Secured Promissory Note is repayable in monthly payments of $69,721 and adjusted from time-to-time as the interest rate changes, with the final payment due in September 2036. Certain of our deposit accounts and MMM LLC's inventories, chattel paper, accounts, equipment and general intangibles have been pledged as collateral for the promissory note. We are required to maintain a deposit balance with Five Star Bank of $1,560,000, which is recorded as restricted cash included in non-current assets. In addition, until we provide documentation that the proceeds were used for construction of our manufacturing plant, proceeds from the loan will be maintained in a restricted deposit account with Five Star Bank. As of December 31, 2017, we had $487,000 remaining in this restricted deposit account, which is recorded as restricted cash included in current assets.

August 2015 Senior Secured Promissory Notes

On August 20, 2015, we entered into a purchase agreement with Ivy Science & Technology Fund, Waddell & Reed Advisors Science& Technology Fund and Ivy Funds VIP Science and Technology, each an affiliate of Waddell & Reed, which is a beneficial owner of more than 5% of our common stock. Pursuant to such purchase agreement, we sold to such affiliates senior secured promissory notes ("August 2015 Senior Secured Promissory Notes") in the aggregate principal amount of $40,000,000. The August 2015 Senior Secured Promissory Notes bear interest at a rate of 8% per annum payable semi-annually on June 30 or December 31 of each year, commencing on December 31, 2015, with $10,000,000 payable three years from the closing, $10,000,000 payable four years from the closing and $20,000,000 payable five years from the closing. On May 31, 2016, we entered into an amendment to the August 2015 Senior Secured Promissory Notes, pursuant to which each such affiliate agreed to delete from the August 2015 Senior Secured Promissory Notes the provisions that had required us to maintain a $15 million minimum cash balance. Pursuant to an amendment entered into in December 2017, in connection with the February 2018 Financing Transactions, $35.0 million aggregate principal amount of the August 2015 Senior Secured Promissory Notes was converted into an aggregate of 20,000,000 shares of our common stock and warrants to purchase 4,000,000 shares of our common stock, such that $5.0 million of principal under the such notes remained outstanding, the maturity of the such notes was extended to December 31, 2022, all interest payments under the such notes was deferred to maturity on December 31, 2022 and Ospraie was granted a right of first refusal to acquire such notes.

The August 2015 Senior Secured Promissory Notes are secured by substantially all of our personal property assets. The agent, acting on behalf of the lenders, shall be entitled to have a first priority lien on our intellectual property assets, pursuant to intercreditor arrangements with certain of our existing lenders.

LSQ Financing

On March 24, 2017, we entered into an Invoice Purchase Agreement (the "LSQ Financing") with LSQ pursuant to which LSQ may elect to purchase up to $7,000,000 of eligible customer invoices from the Company. Our obligations under the LSQ Financing are secured by a lien on substantially all of our personal property.

Advances by LSQ may be made at an advance rate of up to 80% of the face value of the receivables being sold. Upon the sale of the receivable, we will not maintain servicing. LSQ may require us to repurchase accounts receivable if (i) the payment is disputed by the account debtor, with the purchaser being under no obligation to determine the bona fides of such dispute, (ii) the account debtor has become insolvent or (iii) upon the effective date of the termination of the LSQ Financing. LSQ will retain its security interest in any accounts repurchased from us.

We also pay to LSQ (i) an invoice purchase fee equal to 1% of the face amount of each purchased invoice, at the time of the purchase, and (ii) a funds usage fee equal to 0.035%, payable monthly in arrears. An aging and collection fee is charged at the time when the purchased invoice is collected, calculated as a percentage of the face amount of such invoice while unpaid (which percentage ranges from 0% to 0.35% depending upon the duration the invoice remains outstanding). The LSQ Financing will be effective for one year with automatic one year renewals thereafter unless terminated by the Company at least 60 and not greater than 90 days from the end of the then-effective term; a termination fee is due upon early termination by the Company if such termination is not requested within such 30-day window. LSQ may terminate this agreement with 30 days written notice at which time the LSQ Financing will be terminated at the earlier of the 30-day period, the end of the current term, or the end of the then renewal term. The events of default under the LSQ Financing include failure to pay amounts due, failure to turn over amounts due to LSQ within a cure period, breach of covenants, falsity of representations, and certain insolvency events. We incurred $215,000 in financing-related costs as part of the LSQ Financing that were recorded as a debt discount and amortized to interest expenses over the initial one-year term. The unamortized portion of these financing costs is $54,000 as of December 31, 2017.

In April 2017, we began receiving advances under the LSQ Financing. There was a $1.2 million in outstanding balance under the LSQ Financing as of December 31, 2017.

Upon sale of the receivable, we may elect to set up a reserve where upon the cash for the sale remains with the third-party and the Company can draw on the available amount on the reserve account at any time. Since April 2017, there were times when we elected to utilize the reserve account, and we had $4,000 in excess funds available on the reserve account outstanding as of December 31, 2017. As of December 31, 2017, we had $2,931,000 included in accounts receivable that were transferred under this arrangement.

Convertible Secured Promissory Note

On October 12, 2017, we and Dwight W. Anderson ("Anderson") entered into a $1,000,000 convertible promissory note, which was restated in its entirety by a convertible promissory note entered into by the Company and Anderson on October 23, 2017 (the "October 2017 Convertible Note"). The October 2017 Convertible Note was an unsecured promissory note in the aggregate principal amount of up to $6,000,000, at Anderson's sole discretion, due on October 23, 2020 (the "Maturity Date"). Under the terms of the October 2017 Convertible Note, from the date of the closing through December 31, 2017, the October 2017 Convertible Note bore interest at a rate of 1% per annum, payable in arrears on the Maturity Date, unless earlier converted into shares of our common stock as described below. Thereafter, beginning January 1, 2018, the October 2017 Convertible Note bore interest at a rate of 10% per annum, payable in arrears on the Maturity Date, unless earlier converted into shares of our common stock as described below.

Any or all of the principal or accrued interest under the October 2017 Convertible Note was convertible into shares of our common stock at a rate of one share of common stock per $1.00 of converting principal or interest, rounded down to the nearest share with any fractional amounts cancelled, at the election of Anderson by delivery of written notice to the Company. In addition, upon the consummation of a qualified equity financing of the Company prior to the Maturity Date, the aggregate outstanding principal balance of the October 2017 Convertible Note and all accrued and unpaid interest thereon was convertible, at the option of Anderson, into that number of the securities issued and sold in such financing, determined by dividing (a) such aggregate principal and accrued interest amounts, by (b) the purchase price per share or unit paid by the purchasers of the Company's securities issued and sold in such financing. Notwithstanding the foregoing, Anderson's ability to affect any such conversions will be limited by applicable provisions governing issuances of shares of the Company's common stock under the rules of The Nasdaq Capital Market, subject to the Company's receipt of any applicable waivers thereof, and any amounts not issuable to Anderson in the Company's equity securities as a result of this limitation will be payable in cash.

On December 22, 2017, the Company and Anderson amended and restated in its entirety the terms of the October 2017 Convertible Note ("Secured December 2017 Convertible Note"). The Secured December 2017 Promissory Note was a secured promissory note in the aggregate principal amount of up to $6,000,000, at Anderson's sole discretion, due on October 12, 2020 (the "Maturity Date"). As of December 31, 2017, the outstanding balance under the Secured December Convertible Note was $4,000,000. The interest rate and conversion terms of the Secured December 2017 Convertible Note remained unchanged from the terms of the October 2017 Convertible Note as described above, except that in connection with the entry into the Purchase Agreement, the conversion rate was reduced from $1.00 per share of our common stock to $0.50.

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

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
		(In thousands)	
Net cash used in operating activities	$ (21,056)	$ (24,307)	$ (36,174)
Net cash used in investing activities	(814)	(209)	(1,646)
Net cash provided by financing activities	13,047	14,287	22,334
Net decrease in cash and cash equivalents	$ (8,823)	$ (10,229)	$ (15,486)

Cash Flows from Operating Activities

Net cash used in operating activities of $21.1 million during the twelve months ended December 31, 2017 primarily resulted from our net loss of $30.9 million, which included $2.0 million of depreciation and amortization expense, $2.1 million of share-based compensation expense, $1.6 million of non-cash interest expense, and $0.4 million of loss on sale of equipment. In addition, net cash used in operating activities resulted from an increase in inventories of $1.3 million, increases in prepaid expenses and deferred product revenues of $0.5 million, all of which was offset by a $2.3 million increase in accounts payable, a $2.6 million increase in accrued and other liabilities, and a $0.8 million increase in deferred revenues.

Net cash used in operating activities of $24.3 million during the twelve months ended December 31, 2016 primarily resulted from our net loss of $31.1 million, which included $2.2 million of depreciation and amortization expense, $2.7 million of share-based compensation expense, $1.3 million of non-cash interest expense, and $0.1 million of loss on disposal of equipment. In addition, net cash used in operating activities resulted from an increase in accounts receivable of $1.2 million, and decreases in accounts payable of $0.6 million, deferred cost of product revenues of $1.1 million, and a decrease in accrued other liabilities of $0.2 million. This was offset by decreases in inventories of $0.6 million, prepaid expenses and other assets of $0.2 million, an increase in deferred revenues, including related party deferred revenue, of $2.3 million and accrued interest due to related parties of $0.4 million.

Net cash used in operating activities of $36.2 million during the twelve months ended December 31, 2015 primarily resulted from our net loss of $43.7 million, which included $3.5 million of depreciation and amortization expense, $3.8 million of share-based compensation expense and $0.8 million of non-cash interest expense. The net loss also includes approximately $7.7 million in accounting, consulting and legal fees incurred, net of insurance proceeds, as a result of the Audit Committee's independent investigation, which began in September 2014, and subsequent restatement of our financial statements. In addition, net cash used in operating activities resulted from an increase in accounts receivable of $0.6 million, and decreases in accounts payable of $3.5 million, accrued and other liabilities of $0.1 million, deferred revenue from related parties of $0.5 million and customer refund liabilities of $1.0 million. This was offset by decreases in inventories of $3.6 million, prepaid expenses and other assets of $0.1 million and deferred cost of product revenues of $0.2 million, and an increase in accrued interest due to related parties of $1.2 million.

Cash Flows from Investing Activities

Net cash used in investing activities of $0.8 million during the twelve months ended December 31, 2017 resulted from the purchase of property, plant and equipment to support growth of our operations.

Net cash used in investing activities of $0.2 million during the twelve months ended December 31, 2016 resulted from the purchase of property, plant and equipment to support growth of our operations.

Net cash used in investing activities of $1.6 million during the twelve months ended December 31, 2015 primarily resulted from $1.7 million used for the purchase of property, plant and equipment to support growth of our operations.

Cash Flows from Financing Activities

Net cash provided by financing activities of $13.0 million during the twelve months ended December 31, 2017 consisted primarily of $8.2 million in proceeds from the issuance of common stock net of offering costs, proceeds from debt, net of repayments and financing costs of $4.3 million, and $1.0 million from the change in restricted cash associated with one of our secured financings. This was partially offset by $0.4 million in payments on our capital lease obligations.

Net cash provided by financing activities of $14.4 million during the twelve months ended December 31, 2016 consisted primarily of $15.3 million from the change in restricted cash associated with an amendment to our related party debt. This was partially offset by $0.3 million in payments on our debt, $0.8 million in payments on our capital lease obligations.

Net cash provided by financing activities of $22.3 million during the twelve months ended December 31, 2015 consisted primarily of $39.7 million in proceeds from the issuance of debt due to related parties, net of financing costs. This was offset by $0.4 million in payments on our debt, $2.0 million in payments on our capital lease obligations and $15.0 million of restricted cash relating to the debt due to related parties.

Contractual Obligations

The following is a summary of our contractual obligations as of December 31, 2017:

	TOTAL	2018	2019-2020	2021-2022	2023 AND BEYOND
			(In thousands)		
Operating lease obligations	$ 1,564	$ 949	$ 615	$ —	$ —
Debt	66,824	23,988	34,575	657	7,604
Interest payments relating to debt	15,784	6,574	4,266	1,048	3,896
Total	$ 84,172	$ 31,511	$ 39,456	$ 1,705	$ 11,500

Subsequent to December 31, 2017, the Company exchanged certain debt financing for which the maturities are noted above. See Note 17 of the audited financial statements for further discussion.

The following is a summary of our contractual obligations as of February 28, 2018 at the end of the month after the transaction:

	TOTAL	Payable in 2018, after February 28, 2018	2019-2020	2021-2022	2023 AND BEYOND
			(In thousands)		
Operating lease obligations	$ 1,486	$ 871	$ 615	$ —	$ —
Debt	17,572	1,286	575	8,107	7,604
Interest payments relating to debt	9,899	523	1,131	4,349	3,896
Total	$ 28,957	$ 2,680	$ 2,321	$ 12,456	$ 11,500

Operating leases consist of contractual obligations from agreements for non-cancelable office space and leases used to finance the acquisition of equipment. Debt and capital equipment lease payments and the interest payments relating thereto include promissory notes and capital lease obligations in accordance with the payment terms under the agreements.

In September 2013 and then amended in April 2014, we entered into a lease agreement for approximately 27,300 square feet of office and laboratory space located in Davis, California. The initial term of the lease is for a period of 60 months and commenced in August 2014. The monthly base rent is $44,000 for the first 12 months with a 3% increase each year thereafter. Concurrent with this amendment, in April 2014, we entered into a lease agreement with an affiliate of the landlord to lease approximately 17,400 square feet of office and laboratory space in the same building complex in Davis, California. The initial term of the lease is for a period of 60 months and commenced in August 2014. The monthly base rent is $28,000 with a 3% increase each year thereafter. In addition, we leased a portion of the location of our old headquarters in Davis, California until that lease expired in October 2016.

In January 2016, we entered into an agreement with a sublessee to sublease approximately 3,800 square feet of vacant office space in the aforementioned building complex pursuant to the terms of our lease agreement. The initial term of the sublease is for a period of approximately 43 months and commenced on February 1, 2016. The monthly base rent is approximately $5,000 per month for the first 12 months with a 5% increase each year thereafter.

Since December 31, 2017, we have not added any additional leases that would qualify as operating leases.

Inflation

We believe that inflation has not had a material impact on our results of operations during the years ended December 31, 2017, 2016 and 2015.

Off-Balance Sheet Arrangements

We have not been involved in any material off-balance sheet arrangements.

Recently Issued Accounting Pronouncements

See Note 2 to the Consolidated Financial Statements included in this Annual Report on Form 10-K in Part II-Item 8-"Financial Statements and Supplementary Data."

Critical Accounting Policies and Estimates

Our consolidated financial statements and the related notes included elsewhere in this Annual Report on Form 10-K are prepared in accordance with GAAP. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, net revenue, costs and expenses, and any related disclosures. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. Changes in accounting estimates are reasonably likely to occur from period to period. Accordingly, actual results could differ significantly from the estimates made by our management. We evaluate our estimates and assumptions on an ongoing basis. To the extent that there are material differences between these estimates and our actual results, our future financial statement presentation, financial condition, results of operations and cash flows will be affected.

We believe that the assumptions and estimates associated with revenue recognition, including assumptions and estimates used in determining the timing and amount of revenue to recognize for those transactions accounted for on a “sell-through” method, inventory valuation and share-based compensation have the greatest potential impact on our consolidated financial statements. Therefore, we consider these to be our critical accounting policies and estimates. See Note 2 to our accompanying Notes to Consolidated Financial Statements included in Part II-Item 8-“Financial Statements and Supplementary Data” in this Annual Report on Form 10-K for additional information regarding our significant accounting policies.

Inventories

Inventories are stated at the lower of cost or market value (net realizable value or replacement cost) and include the cost of material and external and internal labor and manufacturing costs. Cost is determined on the first-in, first-out basis. We provide for inventory reserves when conditions indicate that the selling price may be less than cost due to physical deterioration, obsolescence, changes in price levels or other factors. Additionally, we provide reserves for excess and slow-moving inventory on hand that is not expected to be sold to reduce the carrying amount of excess and slow-moving inventory to its estimated net realizable value. The reserves are based upon estimates about future demand from our customers and distributors and market conditions.

Fair Value of Financial Instruments

Fair value is defined as an exit price that would be received from the sale of an asset or paid to transfer a liability in an orderly transaction between market participants on the measurement date. A three tier fair value hierarchy has been established, which prioritizes the inputs used in measuring fair value as follows: Level 1, observable inputs such as quoted prices in active markets; Level 2, inputs other than the quoted prices in active markets that are observable either directly or indirectly; and Level 3, unobservable inputs in which there is little or no market data, which requires that we develop our own assumptions. This hierarchy requires the use of observable data, when available, and minimizes the use of unobservable inputs when determining fair value.

Revenue Recognition

We recognize revenues when persuasive evidence of an arrangement exists, transfer of title has occurred or services have been rendered, the price is fixed or determinable and collectability is reasonably assured. If contractual obligations, acceptance provisions or other contingencies exist which indicate that the price is not fixed or determinable, revenue is recognized after such obligations or provisions are fulfilled or expire.

Product revenues consist of revenues generated from sales of our products to distributors and direct customers, net of rebates and cash discounts. For sales of products made to distributors, we recognize revenue either on a sell-in or sell-through basis depending on the specific facts and circumstances of the transaction(s) with the distributor. Factors considered include, but are not limited to, whether the payment terms offered to the distributor are structured to correspond to when product is resold, the distributor history of adhering to the terms of its contractual arrangements with us, whether we have a pattern of granting concessions for the benefit of the distributor and whether there are other conditions that may indicate that the sale to the distributor is not substantive.

In some cases, we recognize distributor revenue as title and risk of loss passes, provided all other revenue recognition criteria have been satisfied (the “sell-in” method). For certain sales to certain distributors, the revenue recognition criteria for distributor sales are not satisfied at the time title and risk of loss passes to the distributor; specifically, in instances where “inventory protection” arrangements were offered to distributors that permitted these distributors to return to us certain unsold products, we consider the arrangement not to be fixed or determinable, and accordingly, revenue is deferred until products are resold to customers of the distributor (the “sell-through” method). As of December 31, 2017 and 2016, we recorded deferred product revenues of $6.5 million and $5.4 million, respectively, The cost of product revenues associated with such deferral are also deferred and classified as deferred cost of product revenues in the consolidated balance sheets. Cash received from customers related to delivered product that may not represent a true sale is classified as customer refund liabilities in the consolidated balance sheets and the related cost of inventory remains in inventory in the consolidated balance sheets until the product is returned or is resold to customers of the distributor and revenue is recognized. During the years ended December 31, 2017, 2016 and 2015, 39%, 44% and 47%, respectively, of total revenues were recognized on a sell-through basis.

We offer certain product rebates to our distributors and growers, which are estimated and recorded as reductions to product revenues, and an accrued liability is recorded at the later of when the revenues are recorded or the rebate is being offered.

We recognize license revenues pursuant to strategic collaboration and distribution agreements under which we receive payments for the achievement of certain testing validation, regulatory progress and commercialization events. As these activities and payments are associated with exclusive rights that we provide in connection with strategic collaboration and distribution agreements over the term of the agreements, revenues related to the payments received are deferred and recognized over the term of the exclusive distribution period of the respective agreement. We received no payments under these years for the year ended December 31, 2017 and there were no amounts included in accounts receivable under these agreements as of December 31, 2017. During the year ended December 31, 2016, we received payments totaling $0.3 million under these agreements, and as of December 31, 2016, there were no amounts included in accounts receivable under these agreements. During the year ended December 31, 2015, we received payments totaling $0.8 million under these agreements.

As of December 31, 2017, we recorded current and non-current deferred revenues of $0.2 million and $1.6 million, respectively, related to payments received under these agreements. As of December 31, 2016, we recorded current and non-current deferred revenues of $0.2 million and $1.8 million, respectively, related to payments received under these agreements.

Share-Based Compensation

We recognize share-based compensation expense for all stock options and restricted stock units granted to employees and directors based on estimated fair values.

We estimate the fair value of restricted stock units based on the closing bid price of our common stock on the date of grant. During the year ended December 31, 2017, 2016, and 2015, we recognized $123,000, $198,000 and $96,000 of share-based compensation expense on restricted stock units. Total share-based compensation expense related to restricted stock units not yet recognized as of December 31, 2017 was $314,000, which is expected to be recognized over a weighted average period of 1.3 years.

We estimate the fair value of stock options on the date of grant using an option-pricing model. The value of the portion of the stock options that is ultimately expected to vest is recognized as expense on a straight-line basis over the requisite service period. Forfeitures are estimated on the date of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

The estimated fair value of options vested during the years ended December 31, 2017, 2016 and 2015 was $2.1 million, $2.5 million and $5.0 million, respectively. The weighted-average estimated fair value of options granted during the years ended December 31, 2017, 2016 and 2015 was $0.63, $0.61, and $0.75 per share, respectively. During the years ended December 31, 2017, 2016 and 2015, we recorded share-based compensation expense related to stock options of $1.9 million, $2.5 million, and $3.7 million, respectively. As of December 31, 2017, the total share-based compensation expense related to unvested stock options granted to employees under our share-based compensation plans but not yet recognized was $0.5 million. These costs will be amortized to expense on a straight-line basis over a weighted-average remaining term of 2.0 years.

We use the Black-Scholes-Merton ("BSM") option-pricing model to calculate the estimated fair value of stock options on the measurement date (generally, the date of grant). The required inputs in the option-pricing model include the expected life of the stock options, estimated volatility factor, risk-free interest rate and expected dividend yield. These inputs are subjective and generally require significant judgment. During the years ended December 31, 2017, 2016 and 2015, we calculated the fair value of stock options granted based on the following assumptions:

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
Expected life (years)	6.08	5.85-6.08	6.08
Estimated volatility factor	43%-45%	45%-46%	46%-47%
Risk-free interest rate	1.82%-2.3%	1.13%-2.18%	1.86%-1.93%
Expected dividend yield	—	—	—

Expected Life.

Expected life represents the period that share-based payment awards are expected to be outstanding. We use the "simplified method" in accordance with Staff Accounting Bulletin ("SAB") No. 107, *Share-Based Payment* ("SAB No. 107"), and SAB No. 110, *Simplified Method for Plain Vanilla Share Options* ("SAB No. 110"), to calculate the expected term of stock options determined to be "plain vanilla." Under this approach, the expected term is presumed to be the midpoint between the vesting date and the contractual end of the stock option grant. For stock options granted with an exercise price not equal to the determined fair market value, we estimate the expected life based on historical data and management's expectations about exercises and post-vesting termination behavior. We will use the simplified method until we have sufficient historical data necessary to provide a reasonable estimate of expected life in accordance with SAB No. 107 and SAB No. 110.

Estimated Volatility Factor. As our common stock has a limited trading history, we calculate the estimated volatility factor based on the trading history and calculated volatility of the common stock of comparable agricultural biotechnology companies.

Risk-Free Interest Rate. We calculate the risk-free interest rate based on the implied yield currently available on U.S. Treasury constant-maturity securities with the same or substantially equivalent remaining term as the expected life of the stock options.

Expected Dividend Yield. We have not declared dividends nor do we expect to in the foreseeable future. Therefore, a zero value was assumed for the expected dividend yield.

Estimated Forfeitures. We consider voluntary and involuntary termination behavior and actual stock option forfeitures when estimating forfeitures.

If, in the future, we determine that other methods for calculating these assumptions are more reasonable, or if other methods are prescribed by authoritative guidance, the fair value calculated for our stock options could change significantly. Higher volatility factors and longer expected lives result in an increase to the share-based compensation expense determined at the date of grant. Share-based compensation expense is recorded in research, development and patent expense and selling, general and administrative expense.

The BSM option-pricing model was developed for use in estimating the fair value of traded options that have no vesting restrictions and are fully transferable, characteristics not present in our stock options. Existing valuation models, including the BSM option-pricing model, may not provide reliable measures of the fair values of our stock options. Consequently, there is a risk that our estimates of the fair values of the stock options on the grant dates may bear little resemblance to the actual values realized upon exercise. Stock options may expire or otherwise result in zero intrinsic value as compared to the fair values originally estimated on the grant date and reported in the consolidated financial statements. Alternatively, value may be realized from these instruments that is significantly higher than the fair values originally estimated on the grant date and reported in the consolidated financial statements.

Income Taxes

We use the asset and liability method of accounting for income taxes. Deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to the differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. To the extent that deferred tax assets cannot be recognized under the preceding criteria, we establish valuation allowances, as necessary, to reduce deferred tax assets to the amounts expected to be realized. As of December 31, 2017 and 2016, all deferred tax assets were fully offset by a valuation allowance. The realization of deferred tax assets is dependent upon future federal, state and foreign taxable income. Our judgments regarding deferred tax assets may change due to future market conditions, as we expand into international jurisdictions, due to changes in U.S. or international tax laws and other factors. These changes, if any, may require material adjustments to our deferred tax assets, resulting in a reduction in net income or an increase in net loss in the period in which such determinations are made.

We recognize liabilities for uncertain tax positions based upon a two-step process. To the extent that a tax position does not meet a more-likely-than-not level of certainty, no benefit is recognized in the consolidated financial statements. If a tax position meets the more-likely-than-not level of certainty, it is recognized in the consolidated financial statements at the largest amount that has a greater than 50% likelihood of being realized upon ultimate settlement. Our policy is to analyze our tax positions taken with respect to all applicable income tax issues for all open tax years in each respective jurisdiction. As of December 31, 2017 and 2016, we concluded that no uncertain tax positions were required to be recognized in our consolidated financial statements.

We recognize interest and penalties related to income tax matters in income tax expense. No amounts were recognized for interest and penalties during the years ended December 31, 2017, 2016 and 2015.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We currently have minimal exposure to the effect of interest rate changes, foreign currency fluctuations and changes in commodity prices. We are exposed to changes in the general economic conditions in the countries where we conduct business, which currently is substantially all in the United States. Our current investment strategy is to invest in financial instruments that are highly liquid, readily convertible into cash and which mature within six months from the date of purchase. To date, we have not used derivative financial instruments to manage any of our market risks or entered into transactions using derivative financial instruments for trading purposes.

We do not believe our cash equivalents have significant risk of default or illiquidity. While we believe our cash equivalents do not contain excessive risk, we cannot provide absolute assurance that in the future our investments will not be subject to adverse changes in market value.

Interest Rate Risk

We had cash and cash equivalents of $0.8 million as of December 31, 2017, which was held for working capital purposes. We do not enter into investments for trading or speculative purposes. We entered into a promissory note in June 2014, which bears interest at the prime rate plus 2%. A change in market interest rates of 1% would have an impact of approximately $0.1 million on our future annual interest expense. All of our other debt is at fixed interest rates and thus a change in market interest rates would not have an impact on interest expense.

Foreign Currency Risk

Revenue and expenses have been primarily denominated in U.S. dollars and foreign currency fluctuations have not had a significant impact on our historical results of operations. In addition, our strategic collaboration and distribution agreements for current products provide for payments in U.S. dollars. As we market new products internationally, our product revenues and expenses may be in currencies other than U.S. dollars, and accordingly, foreign currency fluctuations may have a greater impact on our financial position and operating results.

Commodity Risk

Our exposure to market risk for changes in commodity prices currently is minimal. As our commercial operations grow, our exposure will relate mostly to the demand side as our end users are exposed to fluctuations in prices of agricultural commodities.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of
Marrone Bio Innovations, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Marrone Bio Innovations, Inc. (the Company) as of December 31, 2017 and 2016, the related consolidated statements of operations, comprehensive loss, stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2017, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles.

The Company's Ability to Continue as a Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company's historical operating results and negative working capital indicate substantial doubt exists about the Company's ability to continue as a going concern. Management's evaluation of the events and conditions and management's plans regarding these matters also are described in Note 1. The consolidated financial statements do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classification of liabilities that may result from the outcome of this uncertainty.

Basis for Opinion

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

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

Roseville, California

April 4, 2018

MARRONE BIO INNOVATIONS, INC.
Consolidated Balance Sheets
(In Thousands, Except Par Value)

	DECEMBER 31, 2017	DECEMBER 31, 2016
Assets		
Current assets:		
Cash and cash equivalents	$ 786	$ 9,609
Restricted cash, current portion	487	1,444
Accounts receivable	3,785	3,592
Inventories, net	9,827	8,482
Deferred cost of product revenues	3,063	2,688
Prepaid expenses and other current assets	1,170	1,060
Total current assets	19,118	26,875
Property, plant and equipment, net	16,016	17,343
Restricted cash, less current portion	1,560	1,560
Other assets	219	205
Total assets	$ 36,913	$ 45,983
Liabilities and stockholders' deficit		
Current liabilities:		
Accounts payable	$ 3,800	$ 1,385
Accrued liabilities	8,189	5,508
Accrued interest due to related parties	1,622	1,618
Deferred revenue, current portion	6,193	5,647
Derivative liability	674	—
Capital lease obligations, current portion	—	839
Debt, current portion	1,524	252
Total current liabilities	22,002	15,249
Deferred revenue, less current portion	2,046	1,787
Debt, less current portion	24,407	21,083
Debt due to related parties	37,822	36,667
Other liabilities	1,287	1,381
Total liabilities	87,564	76,167
Commitments and contingencies *(Note 11)*		
Stockholders' deficit:		
Preferred stock: $0.00001 par value; 20,000 shares authorized and no shares issued or outstanding at December 31, 2017 and December 31, 2016	—	—
Common stock: $0.00001 par value; 250,000 shares authorized, 31,351 shares issued and outstanding as of December 31, 2017 and 24,661 as of December 31, 2016	—	—
Additional paid in capital	214,921	204,463
Accumulated deficit	(265,572)	(234,647)
Total stockholders' deficit	(50,651)	(30,184)
Total liabilities and stockholders' deficit	$ 36,913	$ 45,983

See accompanying notes.

MARRONE BIO INNOVATIONS, INC.
Consolidated Statements of Operations
(In Thousands, Except Per Share Data)

	YEAR ENDED DECEMBER 31, 2017	2016	2015
Revenues:			
Product	$ 17,935	$ 13,715	$ 8,976
License	232	327	333
Related party	—	—	492
Total revenues	18,167	14,042	9,801
Cost of product revenues, including cost of product revenues to related parties of $0, $0 and $254 for the years ended December 31, 2017, 2016 and 2015, respectively	10,528	9,522	9,256
Gross profit	7,639	4,520	545
Operating Expenses:			
Research, development and patent	10,820	9,670	13,500
Selling, general and administrative	19,814	18,510	26,502
Total operating expenses	30,634	28,180	40,002
Loss from operations	(22,995)	(23,660)	(39,457)
Other income (expense):			
Interest income	1	37	51
Interest expense	(3,374)	(2,941)	(2,764)
Interest expense to related parties	(4,355)	(4,361)	(1,599)
Change in estimated fair value of derivative liability	(96)	—	—
Other income (expense), net	(106)	(146)	41
Total other expense, net	(7,930)	(7,411)	(4,271)
Loss before income taxes	(30,925)	(31,071)	(43,728)
Income taxes	—	—	—
Net loss	$ (30,925)	$ (31,071)	$ (43,728)
Basic and diluted net loss per common share	$ (1.06)	$ (1.26)	$ (1.79)
Weighted-average shares outstanding used in computing net loss per common share	29,235	24,617	24,469

See accompanying notes.

MARRONE BIO INNOVATIONS, INC.
Consolidated Statements of Comprehensive Loss
(In Thousands)

	YEAR ENDED DECEMBER 31,		
	2017	**2016**	**2015**
Net loss	$ (30,925)	$ (31,071)	$ (43,728)
Other comprehensive loss	—	—	—
Comprehensive loss	$ (30,925)	$ (31,071)	$ (43,728)

See accompanying notes.

MARRONE BIO INNOVATIONS, INC.
Consolidated Statements Stockholders' Equity (Deficit)
(In Thousands)

	COMMON STOCK		ADDITIONAL PAID IN CAPITAL	ACCUMULATED DEFICIT	TOTAL STOCKHOLDERS' EQUITY (DEFICIT)
	SHARES	AMOUNT			
Balance at December 31, 2014	24,465	$ —	$ 193,079	$ (159,848)	$ 33,231
Net loss	—	—	—	(43,728)	(43,728)
Exercise of stock Options	61	—	54	—	54
Share-based compensation	—	—	3,811	—	3,811
Issuance of common stock warrants	—	—	4,610	—	4,610
Conversion of restricted stock units	10	—	—	—	—
Balance at December 31, 2015	24,536	$ —	$ 201,554	$ (203,576)	$ (2,022)
Net loss	—	—	—	(31,071)	(31,071)
Exercise of stock options	48	—	31	—	31
Share-based compensation	—	—	2,669	—	2,669
Issuance of common stock warrants	—	—	209	—	209
Conversion of restricted stock units	77	—	—	—	—
Balance at December 31, 2016	24,661	$ —	$ 204,463	$ (234,647)	$ (30,184)
Net loss	—	—	—	(30,925)	(30,925)
Exercise of stock options	14	—	17	—	17
Share-based compensation	—	—	2,060	—	2,060
Issuance of common stock warrants for services	—	—	54	—	54
Issuance of restricted stock units	—	—	139	—	139
Issuance of common stock in follow-on offering, net of offering costs and underwriter commissions	6,676	—	8,188	—	8,188
Balance at December 31, 2017	31,351	$ —	$ 214,921	$ (265,572)	$ (50,651)

See accompanying notes.

MARRONE BIO INNOVATIONS, INC.
Consolidated Statements of Cash Flows
(In Thousands)

	YEAR ENDED DECEMBER 31,		
	2017	2016	2015
Cash flows from operating activities			
Net loss	$ (30,925)	$ (31,071)	$ (43,728)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	2,044	2,235	3,510
Loss (gain) on disposal of equipment	363	135	(39)
Share-based compensation and warrants issued for services	2,114	2,669	3,811
Non-cash interest expense	1,596	1,329	803
Change in fair value of derivative liability	96	—	—
Net changes in operating assets and liabilities:			
Accounts receivable	(193)	(1,245)	(560)
Inventories	(1,345)	582	3,580
Prepaid Expenses and other assets	(144)	189	142
Deferred cost of product revenues	(375)	(1,092)	201
Accounts payable	2,305	(588)	(3,486)
Accrued and other liabilities	2,599	(219)	(76)
Accrued interest due to related parties	4	443	1,175
Deferred revenue	805	2,494	29
Deferred revenue from related parties	—	(168)	(492)
Customer refund liabilities	—	—	(1,044)
Net cash used in operating activities	(21,056)	(24,307)	(36,174)
Cash flows from investing activities			
Purchases of property, plant and equipment	(849)	(209)	(1,653)
Proceeds from the sale of equipment	35	—	7
Net cash used in investing activities	(814)	(209)	(1,646)
Cash flows from financing activities			
Proceeds from issuance of common stock, net of offering costs	8,188	—	—
Proceeds from issuance of debt	4,000	—	—
Proceeds from issuance of debt due to related parties, net of financing costs	—	—	39,698
Proceeds from secured borrowings	16,228	—	—
Reductions in secured borrowings	(14,952)	—	—
Repayment of debt	(756)	(260)	(435)
Financing costs	(215)	(75)	—
Repayment of capital leases	(420)	(821)	(1,983)
Change in restricted cash	957	15,412	(15,000)
Exercise of stock options	17	31	54
Net cash provided by financing activities	13,047	14,287	22,334
Net decrease in cash and cash equivalents	(8,823)	(10,229)	(15,486)
Cash and cash equivalents, beginning of period	9,609	19,838	35,324
Cash and cash equivalents, end of period	$ 786	$ 9,609	$ 19,838
Supplemental disclosure of cash flow information			
Cash paid for interest, net of capitalized interest of $0, $0, and $4 and for the years ended December 31, 2017, 2016 and 2015, respectively	$ 5,993	$ 5,550	$ 2,297
Supplemental disclosure of non-cash investing and financing activities			
Property, plant and equipment included in accounts payable and accrued liabilities	$ 245	$ 21	$ 499
Equipment acquired under capital leases	$ —	$ 1,586	$ 787

See accompanying notes.

1. Summary of Business, Basis of Presentation and Liquidity

Marrone Bio Innovations, Inc. ("Company"), formerly Marrone Organic Innovations, Inc., was incorporated under the laws of the State of Delaware on June 15, 2006, and is located in Davis, California. In July 2012, the Company formed a wholly-owned subsidiary, Marrone Michigan Manufacturing LLC ("MMM LLC"), which holds the assets of a manufacturing plant the Company purchased in July 2012. The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiary. All significant intercompany balances and transactions have been eliminated in consolidation. The Company makes bio-based pest management and plant health products. The Company targets the major markets that use conventional chemical pesticides, including certain agricultural and water markets where its bio-based products are used as alternatives for, or mixed with, conventional chemical pesticides. The Company also targets new markets for which (i) there are no available conventional chemical pesticides or (ii) the use of conventional chemical pesticides may not be desirable or permissible either because of health and environmental concerns (including for organically certified crops) or because the development of pest resistance has reduced the efficacy of conventional chemical pesticides. The Company delivers EPA-approved and registered biopesticide products and other bio-based products that address the global demand for effective, safe and environmentally responsible products.

In December 2016, the Company filed a shelf registration statement with the SEC on Form S-3 that provides for the sale and issuance of up to $50,000,000 of its common stock, preferred stock, debt securities, warrants, rights and/or units, including the ability to sell up to $15,000,000 of the Company's common stock through an at-the-market program in accordance with an offering agreement with a third party. See Note 15 for further discussion.

In December 2017, the Company entered into a securities purchase agreement with certain accredited investors for an aggregate purchase price of $30,000,000 of common stock subject to certain conditions which included shareholder approval which had not been met as of December 31, 2017. See Note 17 for further discussion.

The Company is an early stage company with a limited operating history and has a limited number of commercialized products. As of December 31, 2017, the Company had an accumulated deficit of $265,572,000 has incurred significant losses since inception and expects to continue to incur losses for the foreseeable future. Until the completion of the IPO in August 2013, the Company had funded operations primarily with net proceeds from the private placements of convertible preferred stock, convertible notes, promissory notes and term loans, as well as with the proceeds from the sale of its products and payments under strategic collaboration and distribution agreements and government grants. The Company will need to generate significant revenue growth to achieve and maintain profitability. As of December 31, 2017, the Company had a working capital deficit of $2,884,000, including cash and cash equivalents of $786,000. In addition, as of December 31, 2017, the Company had debt and debt due to related parties of $25,931,000 and $37,822,000, respectively, for which the underlying debt agreements contain various financial and non-financial covenants, as well as certain material adverse change clauses. In addition, as of December 31, 2017, the Company had a total of $2,047,000 of restricted cash relating to these debt agreements (see Notes 6 and 14).

If the Company further breaches any of the covenants contained within the debt agreements or if the material adverse change clauses are triggered, the entire unpaid principal and interest balances would be due and payable upon demand. Without entering into a continuation of its current waiver, which expires April 3, 2019, entering into strategic agreements that include significant cash payments upfront, significantly increasing revenues from sales or raising additional capital through the issuance of equity, the Company expects it will exceed its maximum debt-to-worth requirement under a promissory note with Five Star Bank. Further, a violation of a covenant in one debt agreement will cause the Company to be in violation of certain covenants under each of its other debt agreements. Breach of covenants included in the Company's debt agreements, which could result in the lenders demanding payment of the unpaid principal and interest balances, will have a material adverse effect upon the Company and would likely require the Company to seek to renegotiate these debt arrangements with the lenders. If such negotiations are unsuccessful, the Company may be required to seek protection from creditors through bankruptcy proceedings. The Company's inability to maintain compliance with its debt covenants could have a negative impact on the Company's financial condition and ability to continue as a going concern.

The Company participates in a heavily regulated and highly competitive crop protection industry and believes that adverse changes in any of the following areas could have a material effect on the Company's future financial position, results of operations or cash flows: inability to obtain regulatory approvals, increased competition in the pesticide market, market acceptance of the Company's products, weather and other seasonal factors beyond the Company's control, litigation or claims against the Company related to intellectual property, patents, products or governmental regulation, and the Company's ability to support increased growth.

Although the Company recognizes that it will likely need to raise additional funds in the future, there can be no assurance that such efforts will be successful or that, in the event that they are successful, the terms and conditions of such financing will not be unfavorable. Any future equity financing may result in dilution to existing shareholders and any debt financing may include additional restrictive covenants. Any failure to obtain additional financing or to achieve the revenue growth necessary to fund the Company with cash flows from operations will have a material adverse effect upon the Company and will likely result in a substantial reduction in the scope of the Company's operations and impact the Company's ability to achieve its planned business objectives.

The accompanying financial statements have been prepared under the assumption that the Company will continue to operate as a going concern, which contemplates the realization of assets and the settlement of liabilities in the normal course of business. The consolidated financial statements do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts of liabilities that may result from the Company's ability to continue as a going concern. The Company adopted the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update No. 2014-15, *Presentation of Financial Statements – Going Concern (Subtopic 205-40)* effective December 31, 2016, which requires the Company to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the entity's ability to continue as a going concern within one year from the date of the issuance of these consolidated financial statements.

The Company's historical operating results and negative working capital as of December 31, 2017 indicate substantial doubt exists related to the Company's ability to continue as a going concern. However, the Company believes that its existing cash and cash equivalents of $786,000 at December 31, 2017, expected revenues, the net proceeds from equity financing and debt conversions during the first quarter of 2018 (as discussed in Note 17), expected future debt or equity financings and cost management as well as cost reductions will be sufficient to fund operations as currently planned through one year from the date of the issuance of these financial statements. The Company anticipates securing additional sources of through equity and/or debt financings, collaborative or other funding arrangements with partners, or through other sources of financing, consistent with historic results. However, the Company cannot predict, with certainty, the outcome of its actions to grow revenues, to manage or reduce costs or to secure additional financing from outside sources on terms acceptable to us or at all. Further, the Company may continue to require additional sources of cash for general corporate purposes, which may include operating expenses, working capital to improve and promote its commercially available products, advance product candidates, expand international presence and commercialization, general capital expenditures and satisfaction of debt obligations. The Company has based its beliefs on assumptions and estimates that may prove to be wrong, and the Company could spend its available financial resources less or more rapidly than currently expected. The actions discussed above cannot be considered probable of occurring and mitigating the substantial doubt raised by its historical operating results and satisfying its estimated liquidity needs for 12 months from the issuance of the financial statements. If the Company becomes unable to continue as a going concern, it may have to liquidate its assets, and stockholders may lose all or part of their investment in our common stock.

The June 2014 Secured Promissory Note contains a material adverse change clause that could be invoked by the lender as a result of the uncertainty related to the Company's ability to continue as a going concern. If the lender were to declare an event of default, the entire amount of borrowings related to all debt agreements at that time would have to be reclassified as current in the financial statements. The lender has waived their right to deem recurring losses, liquidity, going concern, and financial condition a material adverse change through April 3, 2019. As a result, none of the long term portion of the Company's outstanding debt has been reclassified to current in these financial statements as of December 31, 2017.

2. Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States ("GAAP") requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Cash and Cash Equivalents

The Company considers all highly liquid financial instruments purchased with a maturity of three months or less to be cash equivalents. Cash and cash equivalents consists of cash on deposit, money market funds and certificates of deposit accounts with U.S. financial institutions. The Company is exposed to credit risk in the event of default by financial institutions to the extent that cash and cash equivalents balances with financial institutions are in excess of amounts that are insured by the Federal Deposit Insurance Corporation. The Company has not experienced any losses on these deposits.

Restricted Cash

The Company's restricted cash consists of cash that the Company is contractually obligated to maintain in accordance with the terms of its June 2014 Secured Promissory Note. See Note 6 for further discussion.

Deriviative Liability

From time-to-time, the Company may issue convertible notes that contain embedded features that required derivative accounting. The Company's convertible, debt as further discussed in Note 6, has an embedded derivative that required bifurcation from the host instrument.

Fair Value of Financial Instruments

Accounting Standards Codification ("ASC") 820, *Fair Value Measurements* ("ASC 820"), clarifies that fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability.

ASC 820 requires that the valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. ASC 820 establishes a three tier value hierarchy, which prioritizes inputs that may be used to measure fair value as follows:

- Level 1—Quoted prices in active markets for identical assets or liabilities.
- Level 2—Observable inputs other than quoted prices in active markets for identical assets and liabilities, quoted prices for identical or similar assets or liabilities in inactive markets or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3—Inputs that are generally unobservable and typically reflect management's estimate of assumptions that market participants would use in pricing the asset or liability.

The following table presents the Company's financial assets and liabilities measured at fair value on a recurring basis as of December 31, 2017 and 2016 (in thousands):

	DECEMBER 31, 2017			
	TOTAL	LEVEL 1	LEVEL 2	LEVEL 3
Assets				
Money market funds	$ —	$ —	$ —	$ —

	DECEMBER 31, 2016			
	TOTAL	LEVEL 1	LEVEL 2	LEVEL 3
Assets				
Money market funds	$ 3,752	$ 3,752	$ —	$ —

The Company's money market funds are held at registered investment companies. As of December 31, 2017, there were no money market funds. As of December 31, 2016, the money market funds were in active markets and, therefore, are measured based on the Level 1 valuation hierarchy.

	DECEMBER 31, 2017			
	TOTAL	LEVEL 1	LEVEL 2	LEVEL 3
Liabilities				
Derivative liability	$ 674	$ —	$ —	$ 674

	DECEMBER 31, 2016			
	TOTAL	LEVEL 1	LEVEL 2	LEVEL 3
Derivative liability	$ —	$ —	$ —	$ —

The Company estimated the fair value of the derivative liability as of December 31, 2017 using an Option Pricing Model. The fair value is subjective and is affected by certain significant inputs to the valuation model, which are disclosed in the table below. The fair value of the derivative liability is based upon the outputs of the Option Pricing Model probability-weighted to reflect three different conversion option exercise dates. As the Option Pricing Model estimates the fair value of derivative liability using unobservable inputs, it is considered to be a Level 3 fair value measurement.

As a result of the change in the estimated fair value between the issuance dates of the derivative liability issued beginning on October 12, 2017 and December 31, 2017, the Company recognized a net loss from the total change in estimated fair value of the derivative liabilities as shown in the tables below. This loss is included in the change in estimated fair value of derivative liability in the Company's statement of operations.

The following table provides a reconciliation of the activity between the issuance date and ending balances for the derivative liability measured at fair value using significant unobservable inputs (Level 3) (in thousands):

		WARRANT LIABILITY
Fair value at December 31, 2016	$	—
Derivative liability issued		578
Change in estimated fair value recorded of financial instruments		96
Fair value at December 31, 2017	$	674

The following table represents significant unobservable inputs used in determining the fair value of the derivative liability:

	December 31,	
	2017	2016
Stock Price volatility	60%	—
Risk-free rate	1.28%	—
Probability weighted term in years	0.42	—

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist principally of cash, cash equivalents, accounts receivable and debt. The Company deposits its cash and cash equivalents with high credit quality domestic financial institutions with locations in the U.S. Such deposits may exceed federal deposit insurance limits. The Company believes the financial risks associated with these financial instruments are minimal.

The Company's customer base is dispersed across many different geographic areas, and currently most customers are pest management distributors in the U.S. Generally, receivables are due up to 120 days from the invoice date and are considered past due after this date, although the Company may offer extended terms from time to time.

During the years ended December 31, 2017, 2016 and 2015, 9%, 10% and 9%, respectively, of the Company's revenues were generated from international customers.

The Company's principal sources of revenues were its Regalia, Grandevo, and Venerate product lines for the years ended December 31, 2017, 2016 and 2015, accounting for 87%, 89% and 96%, respectively, of the Company's total revenues.

Customers to which 10% or more of the Company's total revenues are attributable for any one of the periods presented consist of the following:

	CUSTOMER A	CUSTOMER B
Year ended December 31,		
2017	24%	2%
2016	25%	3%
2015	28%	10%

Customers to which 10% or more of the Company's outstanding accounts receivable are attributable as of either December 31, 2017 or 2016 consist of the following:

	Customer					
	A	B	C	D	E	F
December 31, 2017	22%	3%	—%	16%	11%	11%
December 31, 2016	21%	10%	14%	—%	1%	—%

Concentrations of Supplier Dependence

The active ingredient in the Company's Regalia product line is derived from the giant knotweed plant, which the Company obtains from China. The Company currently relies on one supplier for this plant. Such single supplier acquires raw knotweed from numerous regional sources and performs an extraction process on this plant, creating a dried extract that is shipped to the Company's manufacturing plant. While the Company does not have a long-term supply contract with this supplier, the Company does have a long term business relationship with this supplier. The Company endeavors to keep 6 months of knotweed extract on hand at any given time, but an unexpected disruption in supply could have an effect on Regalia supply and revenues. Although the Company has identified additional sources of raw knotweed, there can be no assurance that the Company will continue to be able to obtain dried extract from China at a competitive price.

Accounts Receivable

The carrying value of the Company's receivables represents their estimated net realizable values. The Company generally does not require collateral and estimates any required allowance for doubtful accounts based on historical collection trends, the age of outstanding receivables and existing economic conditions. If events or changes in circumstances indicate that specific receivable balances may be impaired, further consideration is given to the collectablity of those balances and the allowance is recorded accordingly. Past-due receivable balances are written-off when the Company's internal collection efforts have been unsuccessful in collecting the amount due. During the years ended December 31, 2017, 2016 and 2015, no receivables balances were written off. As of December 31, 2017 and 2016, the Company had no allowance for doubtful accounts.

Inventories

Inventories are stated at the lower of cost or market value (net realizable value or replacement cost) and include the cost of material and external and internal labor and manufacturing costs. Cost is determined on the first-in, first-out basis. The Company provides for inventory reserves when conditions indicate that the selling price may be less than cost due to physical deterioration, obsolescence, changes in price levels or other factors. Additionally, the Company provides reserves for excess and slow-moving inventory on hand that is not expected to be sold to reduce the carrying amount of excess and slow-moving inventory to its estimated net realizable value. The reserves are based upon estimates about future demand from the Company's customers and distributors and market conditions.

During the year ended December 31, 2017, the Company recorded, as a component of cost of product revenues, adjustments to inventory reserves of $125,000 due to quantities on hand that may not be used or sold prior to expiration, and an adjustment of $224,000 as a result of actual utilization of the Company's manufacturing plant being less than what is considered normal capacity.

During the year ended December 31, 2016, the Company recorded, as a component of cost of product revenues, adjustments to inventory reserves of $177,000 due to quantities on hand that may not be used or sold prior to expiration, and an adjustment of $771,000 as a result of actual utilization of the Company's manufacturing plant being less than what is considered normal capacity.

During the year ended December 31, 2015, the Company recorded, as a component of cost of product revenues, adjustments to inventory reserves of $19,000 due to quantities on hand that may not be used or sold prior to expiration, and an adjustment of $2,545,000 as a result of actual utilization of the Company's manufacturing plant being less than what is considered normal capacity.

Inventories, net consist of the following (in thousands):

	DECEMBER 31,	
	2017	2016
Raw materials	$ 2,310	$ 3,491
Work in progress	2,441	2,044
Finished goods	5,076	2,947
	$ 9,827	$ 8,482

As of December 31, 2017 and 2016, the Company had $252,000 and $127,000, respectively, in reserves against its inventories.

Deferred Cost of Product Revenues

Deferred cost of product revenues are stated at the lower of cost or net realizable value and include product sold where title has transferred but the criteria for revenue recognition have not been met. As of December 31, 2017 and 2016, the Company recorded deferred cost of product revenues of $3,063,000 and $2,688,000, respectively.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost and are depreciated using the straight-line method over their estimated useful lives. The Company generally uses the following estimated useful lives for each asset category:

ASSET CATEGORY	ESTIMATED USEFUL LIFE
Building	30 years
Computer equipment	2-3 years
Machinery and equipment	3-20 years
Office equipment	3-5 years
Furniture	3-5 years
Leasehold improvements	Shorter of lease term or useful life
Software	3 years

Amortization of assets under capital leases is included in depreciation expense. Maintenance, repairs and minor renewals are expensed as incurred. Expenditures that substantially increase an asset's useful life are capitalized.

The Company recognized a combined loss on disposals or impairment charge totaling $369,000 for the year ended December 31, 2017 on these disposed or held for sale assets. The Company included the loss on disposal or impairment charge in selling, general and administrative expenses. During the year ended December 31, 2016, the Company identified certain equipment that it intended to dispose of or sell in the near term. The estimated net realizable value of this equipment was $70,000 and determined using third-party appraisals. These items were classified as held for sale and were valued based on unobservable inputs and classified as Level 3 within the fair value hierarchy. These assets were classified in prepaid expenses as of December 31, 2016 and disposed of or sold during the year ended December 31, 2017.

Impairment of Long-Lived Assets

Impairment losses related to long-lived assets are recognized in the event the net carrying value of such assets is not recoverable and exceeds fair value. The Company evaluates the recoverability of its long-lived assets whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. The carrying amount of a long-lived asset (asset group) is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset (asset group). If the carrying amount of a long-lived asset (asset group) is considered is not recoverable, the impairment loss is measured as the amount by which the carrying value of the asset group exceeds its estimated fair value.

Revenue Recognition

The Company recognizes revenues when persuasive evidence of an arrangement exists, transfer of title has occurred or services have been rendered, the price is fixed or determinable and collectability is reasonably assured. If contractual obligations, acceptance provisions or other contingencies exist which indicate that the price is not fixed or determinable, revenue is recognized after such obligations or provisions are fulfilled or expire. Product revenues consist of revenues generated from sales of the Company's products to distributors and direct customers, net of rebates and cash discounts. For sales of products made to distributors, the Company recognizes revenue either on a sell-in or sell-through basis depending on the specific facts and circumstances of the transaction(s) with the distributor. Factors considered include, but are not limited to, whether the payment terms offered to the distributor are structured to correspond to when product is resold, the distributor history of adhering to the terms of its contractual arrangements with the Company, whether the Company has a pattern of granting concessions for the benefit of the distributor and whether there are other conditions that may indicate that the sale to the distributor is not substantive.

In some cases, the Company recognizes distributor revenue as title and risk of loss passes, provided all other revenue recognition criteria have been satisfied (the "sell-in" method). For certain sales to certain distributors, the revenue recognition criteria for distributor sales are not satisfied at the time title and risk of loss passes to the distributor; specifically, in instances where "inventory protection" arrangements were offered to distributors that permitted these distributors to return to the Company certain unsold products, the Company considers the arrangement not to be fixed or determinable, and accordingly, revenue is deferred until products are resold to customers of the distributor (the "sell-through" method). As of December 31, 2017 and 2016, the Company recorded deferred product revenues of $6,451,000 and $5,411,000, respectively. The cost of product revenues associated with such deferral are also deferred and classified as deferred cost of product revenues in the consolidated balance sheets. During the years ended December 31, 2017, 2016 and 2015, 39%, 44%, and 47%, respectively, of total revenues were recognized on a sell-through basis.

The Company offers certain product rebates to its distributors and growers, which are estimated and recorded as reductions to product revenues, and an accrued liability is recorded at the later of when the revenues are recorded or the rebate is being offered.

The Company recognizes license revenues pursuant to strategic collaboration and distribution agreements under which the Company receives payments for the achievement of certain testing validation, regulatory progress and commercialization events. As these activities and payments are associated with exclusive rights that the Company provides in connection with strategic collaboration and distribution agreements over the term of the agreements, revenues related to the payments received are deferred and recognized over the term of the exclusive distribution period of the respective agreement. The Company received no payments under these distribution agreements during the year ended December 31, 2017. During the year ended December 31, 2016, the Company received payments totaling $300,000 under these agreements. During the year ended December 31, 2015, the Company received payments totaling $750,000 under these agreements. During the years ended December 31, 2017, 2016 and 2015, the Company recognized $232,000, $327,000 and $333,000, respectively, as license revenues, excluding related party revenues.

As of December 31, 2017, the Company recorded current and non-current deferred revenues of $233,000 and $1,557,000, respectively, related to payments received under these agreements. As of December 31, 2016, the Company recorded current and non-current deferred revenues of $236,000 and $1,787,000, respectively, related to payments received under these agreements.

Research, Development and Patent Expenses

Research and development expenses include payroll-related expenses, field trial costs, toxicology costs, regulatory costs, consulting costs and lab costs. Patent expenses include legal costs relating to the patents and patent filing costs. These costs are expensed to operations as incurred. During the years ended December 31, 2017, 2016 and 2015, research and development expenses totaled $9,711,000, $8,654,000 and $12,392,000, respectively, and patent expenses totaled $1,109,000, $1,016,000, and $1,108,000, respectively.

Shipping and Handling Costs

Amounts billed for shipping and handling are included as a component of product revenues. Related costs for shipping and handling have been included as a component of cost of product revenues.

Advertising

The Company expenses advertising costs as incurred. Advertising costs for the years ended December 31, 2017, 2016 and 2015 were $386,000, $213,000 and $456,000, respectively.

Share-Based Compensation

The Company recognizes share-based compensation expense for all stock options and restricted stock units granted to employees and directors based on estimated fair values.

The Company estimates the fair value of restricted stock units based on the closing bid price of the Company's common stock on the date of grant.

The Company estimates the fair value of stock options on the date of grant using an option-pricing model. The value of the portion of the stock options that is ultimately expected to vest is recognized as expense on a straight-line basis over the requisite service period. Forfeitures are estimated on the date of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

The Company uses the Black-Scholes-Merton option-pricing model to calculate the estimated fair value of stock options on the measurement date (generally, the date of grant). The required inputs in the option-pricing model include the expected life of the stock options, estimated volatility factor, risk-free interest rate and expected dividend yield. These inputs are subjective and generally require significant judgment. During the years ended December 31, 2017, 2016 and 2015, the Company calculated the fair value of stock options granted based on the following assumptions:

	YEAR ENDED DECEMBER 31,		
	2017	**2016**	**2015**
Expected life (years)	6.08	5.85-6.08	6.08
Estimated volatility factor	43%-45%	45%-46%	46%-47%
Risk-free interest rate	1.82%-2.30%	1.13%-2.18%	1.86%-1.93%
Expected dividend yield	—	—	—

Expected Life. Expected life represents the period that share-based payment awards are expected to be outstanding. The Company uses the "simplified method" in accordance with Staff Accounting Bulletin ("SAB") No. 107, *Share-Based Payment* ("SAB No. 107"), and SAB No. 110, *Simplified Method for Plain Vanilla Share Options* ("SAB No. 110"), to calculate the expected term of stock options determined to be "plain vanilla." Under this approach, the expected term is presumed to be the midpoint between the vesting date and the contractual end of the stock option grant. For stock options granted with an exercise price not equal to the determined fair market value, the Company estimates the expected life based on historical data and management's expectations about exercises and post-vesting termination behavior. The Company will use the simplified method until it has sufficient historical data necessary to provide a reasonable estimate of expected life in accordance with SAB No. 107 and SAB No. 110.

Estimated Volatility Factor. As the Company's common stock has a limited trading history, the Company calculates the estimated volatility factor based on the trading history and calculated volatility of the common stock of comparable agricultural biotechnology companies.

Risk-Free Interest Rate. The Company calculates the risk-free interest rate based on the implied yield currently available on U.S. Treasury constant-maturity securities with the same or substantially equivalent remaining term as the expected life of the stock options.

Expected Dividend Yield. The Company has not declared dividends nor does it expect to in the foreseeable future. Therefore, a zero value was assumed for the expected dividend yield.

Estimated Forfeitures. The Company considers voluntary and involuntary termination behavior and actual stock option forfeitures when estimating forfeitures. If, in the future, the Company determines that other methods for calculating these assumptions are more reasonable, or if other methods are prescribed by authoritative guidance, the fair value calculated for the Company's stock options could change significantly. Higher volatility factors and longer expected lives result in an increase to the share-based compensation expense determined at the date of grant. Share-based compensation expense is recorded in the Company's research, development and patent expense and selling, general and administrative expense.

Income Taxes

The Company uses the asset and liability method of accounting for income taxes. Deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to the differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. To the extent that deferred tax assets cannot be recognized under the preceding criteria, the Company establishes valuation allowances, as necessary, to reduce deferred tax assets to the amounts expected to be realized. As of December 31, 2017 and 2016, all deferred tax assets were fully offset by a valuation allowance. The realization of deferred tax assets is dependent upon future federal, state and foreign taxable income. The Company's judgments regarding deferred tax assets may change due to future market conditions, as the Company expands into international jurisdictions, due to changes in U.S. or international tax laws and other factors.

These changes, if any, may require material adjustments to the Company's deferred tax assets, resulting in a reduction in net income or an increase in net loss in the period in which such determinations are made. The Company recognizes liabilities for uncertain tax positions based upon a two-step process. To the extent that a tax position does not meet a more-likely-than-not level of certainty, no benefit is recognized in the consolidated financial statements. If a tax position meets the more-likely-than-not level of certainty, it is recognized in the consolidated financial statements at the largest amount that has a greater than 50% likelihood of being realized upon ultimate settlement. The Company's policy is to analyze the Company's tax positions taken with respect to all applicable income tax issues for all open tax years in each respective jurisdiction. As of December 31, 2017 and 2016, the Company concluded that there were no additional uncertain tax positions were required to be recognized in its consolidated financial statements.

The Company recognizes interest and penalties related to income tax matters in income tax expense. No amounts were recognized for interest and penalties during the years ended December 31, 2017, 2016 and 2015.

Comprehensive Loss

Comprehensive loss represents the net loss for the period adjusted for the results of certain changes to stockholders' equity (deficit) that are not reflected in the consolidated statements of operations, if applicable. Net loss is the only component of the Company's comprehensive loss for the periods presented.

Segment Information

The Company is organized as a single operating segment, whereby its chief operating decision maker assesses the performance of and allocates resources to the business as a whole.

Recently Adopted Accounting Pronouncements

In November 2015, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update No. 2015-17, Balance Sheet Classification of Deferred Taxes ("ASU 2015-17"), which amends the current requirement for organizations to present deferred tax assets and liabilities as current and noncurrent in a classified balance sheet. Organizations will now be required to classify all deferred tax assets and liabilities as noncurrent. ASU 2015-17 is effective for public companies for financial statements issued for fiscal years beginning after December 15, 2016, including interim periods within those fiscal years. Early adoption is permitted. The amendments may be applied prospectively to all deferred tax liabilities and assets or retrospectively to all periods presented. The Company adopted ASU 2015-17 effective January 1, 2017. Adoption of this standard did not have a material impact on the Company's consolidated financial position, results of operations or cash flows.

In March 2016, the FASB issued Accounting Standards Update No. 2016-09, Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting ("ASU 2016-09"). The amendments are effective for public companies for annual periods beginning after December 15, 2016, and interim periods within those annual periods. Several aspects of the accounting for share-based payment award transactions are simplified, including: (a) income tax consequences; (b) classification of awards as either equity or liabilities; and (c) classification on the statement of cash flows. The Company adopted ASU 2016-09 effective January 1, 2017. Adoption of this standard did not have a material impact on the Company's consolidated financial position, results of operations or cash flows.

In July 2015, the FASB issued Accounting Standards Update No. 2015-11, Inventory (Topic 330): Simplifying the Measurement of Inventory ("ASU 2015-11"), which applies guidance on the subsequent measurement of inventory. ASU 2015-11 states that an entity should measure inventory at the lower of cost and net realizable value. Net realizable value is the estimated selling price in the ordinary course of business, less reasonable predictable costs of completion, disposal and transportation. The guidance excludes inventory measured using last-in, first-out or the retail inventory method. ASU 2015-11 is effective for interim and annual reporting periods beginning after December 15, 2016 including interim periods within those fiscal years. Early adoption is permitted. The Company did not early adopt ASU 2015-11. The Company adopted ASU 2015-11 effective January 1, 2017. Adoption of this standard did not have a material impact on the Company's consolidated financial position, results of operations or cash flow.

Recently Issued Accounting Pronouncements

In August 2016, the FASB issued Accounting Standards Update No. 2016-15, Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments ("ASU 2016-15"). The amendments in this update clarify how certain cash receipts and cash payments are presented and classified in the statement of cash flows. ASU No. 2016-15 will be effective for fiscal years beginning after December 15, 2017, with early adoption permitted. The Company has not elected to early adopt this guidance and is currently evaluating ASU 2016-15 to determine the impact to its consolidated financial statements.

In June 2016, the FASB issued Accounting Standards Update No. 2016-13, Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments ("ASU 2016-13"). ASU 2016-13 introduces a new forward-looking approach, based on expected losses, to estimate credit losses on certain types of financial instruments, including trade receivables. The estimate of expected credit losses will require entities to incorporate considerations of historical information, current information and reasonable and supportable forecasts. ASU 2016-13 also expands the disclosure requirements to enable users of financial statements to understand the entity's assumptions, models and methods for estimating expected credit losses. For public business entities that meet the definition of a Securities and Exchange Commission filer, ASU 2016-13 is effective for annual and interim reporting periods beginning after December 15, 2019, and the guidance is to be applied using the modified-retrospective approach. Earlier adoption is permitted for annual and interim reporting periods beginning after December 15, 2018. The Company is currently evaluating ASU 2016-13 to determine the impact to its consolidated financial statements and related disclosures.

In February 2016, the FASB issued Accounting Standards Update No. 2016-02, Leases (Topic 842) Leases: Amendments to the FASB Accounting Standards Codifications ("ASU 2016-02"), to increase transparency and comparability among organizations by recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements. ASU 2016-02 is effective for public companies for financial statements issued for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. Early adoption is permitted. Companies must apply a modified retrospective transition approach for leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements. The modified retrospective approach would not require any transition accounting for leases that expired before the earliest comparative period presented. Lessees and lessors may not apply a full retrospective transition approach. The Company is currently evaluating ASU 2016-02 to determine the potential impact to its consolidated financial statements and related disclosures.

In January 2016, the FASB issued Accounting Standards Update 2016-01, Financial Instruments – Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities (“ASU 2016-01”). ASU 2016-01 applies to all entities that hold financial assets or owe financial liabilities and is intended to provide more useful information on the recognition, measurement, presentation and disclosure of financial instruments. Among other things, ASU 2016-01 (i) requires equity investments (except those accounted for under the equity method of accounting or those that result in consolidation of the investee) to be measured at fair value with changes in fair value recognized in net income; (ii) simplifies the impairment assessment of equity investments without readily determinable fair values by requiring a qualitative assessment to identify impairment; (iii) eliminates the requirement to disclose the fair value of financial instruments measured at amortized cost for entities that are not public business entities; (iv) eliminates the requirement for public business entities to disclose the method(s) and significant assumptions used to estimate the fair value that is required to be disclosed for financial instruments measured at amortized cost on the balance sheet; (v) requires public business entities to use the exit price notion when measuring the fair value of financial instruments for disclosure purposes; (vi) requires an entity to present separately in other comprehensive income the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk when the entity has elected to measure the liability at fair value in accordance with the fair value option for financial instruments; (vii) requires separate presentation of financial assets and financial liabilities by measurement category and form of financial asset (that is, securities or loans and receivables) on the balance sheet or the accompanying notes to the financial statements; and (viii) clarifies that an entity should evaluate the need for a valuation allowance on a deferred tax asset related to available-for-sale securities in combination with the entity’s other deferred tax assets. For public business entities, ASU 2016-01 is effective for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years. The Company is currently evaluating ASU 2016-01 to determine the potential impact to its consolidated financial statements and related disclosures.

In May 2014, the FASB issued Accounting Standards Update No. 2014-09, *Revenue from Contracts with Customers* (Topic 606) (“ASU 2014-09”). ASU 2014-09 and its related amendments provide new, globally applicable converged guidance concerning recognition and measurement of revenue. The new guidance requires the application of a five-step model to determine the amount and timing of revenue to be recognized. The underlying principle is that revenue is to be recognized for the transfer of goods or services to customers that reflects the amount of consideration that the Company expects to be entitled to in exchange for those goods or services. Additionally, significant additional disclosures are required about the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers. The new guidance is effective for annual and interim periods beginning on or after December 15, 2017. ASU 2014-09 allows for either full retrospective or modified retrospective adoption. The full retrospective method requires ASU 2014-09 be applied to each prior period presented in the year of adoption and the cumulative effect of adoption would be reflected at the beginning of the year of adoption. The modified retrospective method has the cumulative effect of applying ASU 2014-09 at the beginning of the year of adoption. The Company will adopt ASU 2014-09 in the first quarter of 2018. The Company is currently evaluating the transition method that will be elected and the potential effects of adopting the provisions of ASU 2014-09.

The Company has assessed significant impacts of the new guidance on its accounting policies and procedures and has evaluated the new requirements as applied to existing revenue contracts. The Company believes the most significant impact will relate to the recognition of product sales made to distributors. The Company currently recognizes revenue from the sale of products made to distributors on either a sell-in or sell-through basis depending on the specific circumstances of the arrangement. The new guidance is currently expected to result in an acceleration of revenue as under the new standard, the Company may no longer be required to defer revenues related to distributors that are currently recognized on the sell-through basis. Under the new guidance, the Company will be required to make estimates and evaluate assumptions related to the amount of net contract revenues, including the impact of any forms of variable consideration. These estimates could result in the deferral of revenue. In addition, the new guidance is currently expected to result in expanded disclosures related to variable consideration and the judgments used to estimate it. When the Company adopts the new revenue standard, the Company estimates that the adjustment to its accumulated deficit, deferred revenues and deferred cost of product revenues will be material. The Company is still in the process of estimating the necessary adjustments associated with ASU 2014-09. The Company has reviewed its revenue contracts and is implementing the new guidance for the first quarter of 2018. The Company is also proceeding with updates to its business processes, systems and controls to fully comply with ASU 2014-09.

3. Property, Plant and Equipment

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

	DECEMBER 31,	
	2017	2016
Land	$ 1	$ 1
Buildings	6,528	6,528
Computer equipment and software	522	522
Furniture, fixtures and office equipment	343	352
Machinery and equipment	15,302	14,887
Leasehold improvements	2,373	2,373
Construction in progress	218	7
	25,287	24,670
Less accumulated depreciation	(9,271)	(7,327)
	$ 16,016	$ 17,343

The Company has granted interests in certain property, plant and equipment to third parties in connection with certain financing arrangements (see Note 6).

The Company recognized depreciation and amortization expense during the years ended December 31, 2017, 2016 and 2015 of $2,044,000, $2,235,000 and $3,510,000, respectively, which included amortization expense related to capital leases during those periods (see Note 10).

4. Net Loss per Share

Basic net loss per share is calculated by dividing the net loss attributable to common stockholders by the weighted average number of common shares outstanding during the period. Diluted net loss per share reflects the potential dilution that could occur if securities or other contracts to issue common stock, such as stock options, restricted stock units, convertible notes, convertible preferred stock and warrants, result in the issuance of common stock which share in the losses of the Company. Certain potential shares of common stock have been excluded from the computation of diluted net loss per share for certain periods as their effect would be anti-dilutive. Such potentially dilutive shares are excluded when the effect would be to reduce the loss per share. The treasury stock method has been applied to determine the dilutive effect of warrants.

The following table sets forth the potential shares of common stock as of the end of each period presented that are not included in the calculation of diluted net loss per share because to do so would be anti-dilutive (in thousands):

	DECEMBER 31,		
	2017	2016	2015
Stock options outstanding	3,121	3,397	2,116
Warrants to purchase common stock	4,232	4,152	4,027
Restricted stock units outstanding	822	415	107
Convertible notes payable	4,005	—	—

	2017	2016	2015
	(In thousands, except per share data)		
Numerator:			
Net loss	$ (30,925)	$ (31,071)	$ (43,728)
Denominator			
Weighted average shares outstanding used for basic and diluted net loss per share	29,235	24,617	24,469
Basic and diluted net loss per share	$ (1.06)	$ (1.26)	$ (1.79)

5. Accrued Liabilities

Accrued liabilities consist of the following (in thousands):

	DECEMBER 31,	
	2017	**2016**
Accrued compensation	$ 1,825	$ 1,403
Accrued warranty costs	556	754
Accrued legal costs	1,558	569
Accrued customer incentives	1,986	639
Accrued liabilities, other	2,264	2,143
	$ 8,189	$ 5,508

The Company warrants the specifications and/or performance of its products through implied product warranties and has extended product warranties to qualifying customers on a contractual basis. The Company estimates the costs that may be incurred during the warranty period and records a liability in the amount of such costs at the time product is shipped. The Company's estimate is based on historical experience and estimates of future warranty costs as a result of increasing usage of the Company's products. The Company periodically assesses the adequacy of its recorded warranty liability and adjusts the amount as necessary. Changes in the Company's accrued warranty costs during the period are as follows (in thousands):

Balance at December 31, 2016	$ 754
Warranties issued (released) during the period	(188)
Settlements made during the period	(10)
Balance at December 31, 2017	$ 556

6. Debt

Debt, including debt due to related parties, consists of the following (in thousands):

	DECEMBER 31, 2017	DECEMBER 31, 2016
Secured promissory notes ("October 2012 and April 2013 Secured Promissory Notes") bearing interest at 14.00% per annum, payable monthly through October 2018, collateralized by substantially all of the Company's assets, net of unamortized debt discount as of December 31, 2017 and December 31, 2016 of $103 and $228, respectively, discount is based on imputed interest rate of 15.5%	$ 12,347	$ 12,222
Secured promissory note ("June 2014 Secured Promissory Note") bearing interest at prime plus 2% (6.5% as of December 31, 2017) per annum, payable monthly through June 2036, collateralized by certain of the Company's deposit accounts and MMM LLC's inventories, chattel paper, accounts, equipment and general intangibles, net of unamortized debt discount as of December 31, 2017 and December 31, 2016 of $226 and $247, respectively, discount is based on imputed interest rate of 6.6%	8,872	9,113
Senior secured convertible promissory notes ("December 2017 Convertible Note") Senior Secured Promissory Notes") bearing interest at 1% per annum, interest and principal due at maturity (October 2020), collateralized by substantially all of the Company's assets, net of unamortized discount as of December 31, 2017 of $510 based on imputed interest rate of 54.6%	3,490	—
Secured revolving borrowing ("LSQ Financing") bearing interest at (13.6% annually) payable through the lenders direct collection of certain accounts receivable through March 2018, collateralized by substantially all of the Company's personal property, net of unamortized debt discount as of December 31, 2017 and December 31, 2016 of $54 and $0, respectively, which is amortized on a straight-line basis	1,222	—
Senior secured promissory notes due to related parties ("August 2015 Senior Secured Promissory Notes") bearing interest at 8% per annum, interest is payable biannually with principal payments due in increments at three, four and five years from the closing date, collateralized by substantially all of the Company's assets, net of unamortized discount as of December 31, 2017 and December 31, 2016 of $2,178 and $3,333, respectively debt discount is based on imputed interest rate of 11.0% (see Note 14)	37,822	36,667
Debt, including debt due to related parties	63,753	58,002
Less debt due to related parties	(37,822)	(36,667)
Less current portion	(1,524)	(252)
	$ 24,407	$ 21,083

As of December 31, 2017, aggregate contractual future principal payments on the Company's debt, including debt due to related parties, are due as follows (in thousands):

Year Ended December 31,		
2018		23,988
2019		10,279
2020		24,296
2021		318
2022		339
Thereafter		7,604
Total future principal payments	$	66,824

Subsequent to December 31, 2017, the Company renegotiated certain debt instruments. See Note 17 for further discussion of loan payments.

The fair value of the Company's outstanding debt obligations, which excludes debt due to related parties, as of December 31, 2017 and 2016 was $21,133,000 and $21,611,000, respectively. For the October 2012 and April 2013 Secured Promissory Notes, the debt was valued by applying the ratio of the value of common stock the lender agreed to take as consideration in connection with the Securities Purchase Agreement (Note 17) and applying this ratio to the outstanding principal balance. The Company used 6.5%, the current interest rate, to value the variable rate debt. This debt is classified as Level 3 within the fair value hierarchy. The debt entered into during 2017 was valued using the outstanding principal balance.

October 2012 and April 2013 Secured Promissory Notes

On October 2, 2012, the Company borrowed $7,500,000 pursuant to senior notes (“October 2012 Secured Promissory Notes”) with a group of lenders. On April 10, 2013 (“Conversion Date”), the Company entered into an amendment to increase, by up to $5,000,000, the amount available under the terms of the loan agreement with respect to the October 2012 Secured Promissory Notes. Under this amendment, an additional $4,950,000 was issued in partial consideration for $3,700,000 in cash received and in partial conversion for the cancellation of a $1,250,000 subordinated convertible note (collectively, “April 2013 Secured Promissory Notes”). The total amount borrowed under the amended loan agreement for the October 2012 Secured Promissory Notes and the April 2013 Secured Promissory Notes increased from $7,500,000 to $12,450,000 as of the Conversion Date. The October 2012 and April 2013 Secured Promissory Notes bear interest at 14% at December 31, 2017. This loan is collateralized by substantially all of the Company’s assets.

Activity related to the October 2012 and April 2013 Secured Promissory Notes from December 31, 2016 through December 31, 2017 consisted of the following (in thousands):

	DECEMBER 31, 2016	ADDITIONS	AMORTIZATION OF DEBT	PRINCIPAL PAYMENTS	DECEMBER 31, 2017
Principal	$ 12,450	$ —	$ —	$ —	$ 12,450
Debt discount related to the issuance of common stock warrants (1)	(203)	—	111	—	(92)
Discount related to the $3,750,000 Notes (1)	(25)	—	14	—	(11)
	$ 12,222	$ —	$ 125	$ —	$ 12,347

(1) The amortization of this account is included in interest expense in the consolidated statements of operations and as non-cash interest expense in the consolidated statements of cash flows.

On December 15, 2017, the Company entered into an amendment to change the terms of the October 2012 and April 2013 Secured Promissory Notes. The terms of the amendment were contingent upon the occurrence of a specific equity transaction that had not occurred as of December 31, 2017. See Note 17 for further discussion of the impact of this amendment.

June 2014 Secured Promissory Note

In June 2014, the Company borrowed $10,000,000 pursuant to a business loan agreement and promissory note (“June 2014 Secured Promissory Note”) with Five Star Bank (“Lender”) which bears interest at 6.5% as of December 31, 2017. The interest rate is subject to change and is based on the prime rate plus 2.00% per annum. The June 2014 Secured Promissory Note is repayable in monthly payments of $71,051 and adjusted from time-to-time as the interest rate changes, with the final payment due in June 2036. Certain of the Company’s deposit accounts and MMM LLC’s inventories, chattel paper, accounts, equipment and general intangibles have been pledged as collateral for the promissory note. The Company is required to maintain a deposit balance with the Lender of $1,560,000, which is recorded as restricted cash included in non-current assets. In addition, until the Company provides documentation that the proceeds were used for construction of the Company’s manufacturing plant, proceeds from the loan will be maintained in a restricted deposit account with the Lender. As of December 31, 2017, the Company had $487,000 remaining in this restricted deposit account, which is recorded as restricted cash included in current assets.

The Company may prepay 20% of the outstanding principal loan balance each year without penalty. A prepayment fee of 10% will be charged if prepayments exceed 20% in the first year, and the prepayment fee will decrease by 1% each year for the first ten years of the loan.

The Company is required to maintain a current ratio of not less than 1.25-to-1.0, a debt-to-worth ratio of no greater than 4.0-to-1.0 and a loan-to-value ratio of no greater than 70% as determined by Five Star Bank. The Company is also required to comply with certain affirmative and negative covenants under the loan agreement discussed above. In the event of default on the debt, Five Star Bank may declare the entire unpaid principal and interest immediately due and payable. Effective September 30, 2015, the Company's debt-to-worth ratio was greater than 4.0-to-1.0 as a result of the issuance of $40,000,000 in promissory notes in August 2015 as described in Note 14, which increased the Company's debt while the Company continued to incur net losses, which decreased stockholders' equity. However, the Company received a waiver from Five Star Bank with respect to compliance with the requirements to (i) maintain a current ratio greater than 1.25-to-1.0 (extended to December 31, 2017, and subsequently extended to October 1, 2018) and (ii) maintain a debt-to-worth ratio less than 4.0-to-1.0 (extended to December 31, 2017, and subsequently extended to October 1, 2018). In March 2018, the Company received a waiver from Five Star Bank with respect to compliance with the requirements to (i) maintain a current ratio greater than 1.25-to-1.0 (extended to April 3, 2019) and (iii) maintain a debt-to-worth ratio less than 4.0-to-1.0 (extended to April 3, 2019), as well as a waiver of the material adverse change clause, also through April 3, 2019. The Company would otherwise have been in default of both the current ratio and the debt-to-worth ratio, without the covenant waivers. The receipt of these waiver and the extension to provide financial statements under the October 2012 and April 2013 Secured Promissory Notes cured the Company's otherwise being in breach of the covenants under the loan agreement for the year ended December 31, 2016 and 2017.

On December 15, 2017, the Company entered into an amendment to change the terms of the October 2012 and April 2013 Secured Promissory Notes. The terms of the amendment were contingent upon the financing contemplated in the Purchase Agreement. See Note 17 for further discussion of the impact of this amendment.

LSQ Financing

On March 24, 2017, the Company entered into an Invoice Purchase Agreement (the "LSQ Financing") with LSQ Funding Group, L.C. ("LSQ"), pursuant to which LSQ may elect to purchase up to $7,000,000 of eligible customer invoices from the Company. The Company's obligations under the LSQ Financing are secured by a lien on substantially all of the Company's personal property; such lien is first priority with respect to the Company's accounts receivable, inventory, and related property, pursuant to an intercreditor agreement, dated March 22, 2017 (the "Three Party Intercreditor Agreement"), with administrative agents for the October 2012 and April 2013 Secured Promissory Notes holders and the August 2015 Senior Secured Promissory Notes holders.

Advances by LSQ may be made at an advance rate of up to 80% of the face value of the receivables being sold. Upon the sale of the receivable, the Company will not maintain servicing. LSQ may require the Company to repurchase accounts receivable if (i) the payment is disputed by the account debtor, with the purchaser being under no obligation to determine the bona fides of such dispute, (ii) the account debtor has become insolvent or (iii) upon the effective date of the termination of the LSQ Financing. LSQ will retain its security interest in any accounts repurchased from the Company.

The Company will also pay to LSQ (i) an invoice purchase fee equal to 1% of the face amount of each purchased invoice, at the time of the purchase, and (ii) a funds usage fee equal to 0.035%, payable monthly in arrears. An aging and collection fee is charged at the time when the purchased invoice is collected, calculated as a percentage of the face amount of such invoice while unpaid (which percentage ranges from 0% to 0.35% depending upon the duration the invoice remains outstanding). The LSQ Financing will be effective for one year with automatic one year renewals thereafter unless terminated by the Company at least 60 and not greater than 90 days from the end of the then-effective term; a termination fee is due upon early termination by the Company if such termination is not requested within such 30-day window. LSQ may terminate this agreement with 30 days written notice at which time the LSQ Financing will be terminated at the earlier of the 30-day period, the end of the current term, or the end of the then renewal term. The events of default under the LSQ Financing include failure to pay amounts due, failure to turn over amounts due to LSQ within a cure period, breach of covenants, falsity of representations, and certain insolvency events. The Company incurred $215,000 in financing-related costs as part of the LSQ Financing that were recorded as a debt discount and amortized to interest expenses over the initial one-year term. The unamortized portion of these financing costs is $54,000 as of December 31, 2017.

In April 2017, the Company began receiving advances under the LSQ Financing. There was a $1,222,000, net of discount, in outstanding balance under the LSQ Financing as of December 31, 2017.

Upon sale of the receivable, the Company may elect to set up a reserve where upon the cash for the sale remains with the third-party and the Company can draw on the available amount on the reserve account at any time. Since April 2017, there were times when the Company elected to utilize the reserve account, and the Company had $4,000 in excess funds available on the reserve account outstanding as of December 31, 2017. As of December 31, 2017, the Company had $2,931,000 included in accounts receivable that were transferred under this arrangement.

Equipment Financing

On August 22, 2017, the Company signed an equipment financing agreement ("Equipment Financing Agreement") to purchase certain equipment it had leased under a capital lease. The total borrowed under the Equipment Financing Agreement was $496,000. There was no balance outstanding under the Equipment Financing Agreement as of December 31, 2017.

Secured Convertible Promissory Note

On October 12, 2017, the Company and Dwight W. Anderson ("Anderson") entered into a $1,000,000 convertible promissory note, which was restated in its entirety by a convertible promissory note entered into by the Company and Anderson on October 23, 2017 (the "October 2017 Convertible Note"). The October 2017 Convertible Note was an unsecured promissory note in the aggregate principal amount of up to $6,000,000. The Company's ability to borrow under the October 2017 Convertible Note were subject to Anderson's approval and due on October 23, 2020 (the "Maturity Date"). Under the terms of the October 2017 Convertible Note, from the date of the closing through December 31, 2017, the October 2017 Convertible Note bore interest at a rate of 1% per annum, payable in arrears on the Maturity Date, unless earlier converted into shares of the Company's common stock as described below. Thereafter, beginning January 1, 2018, the October 2017 Convertible Note bore interest at a rate of 10% per annum, payable in arrears on the Maturity Date, unless earlier converted into shares of the Company's common stock as described below.

Any or all of the principal or accrued interest under the October 2017 Convertible Note was convertible into shares of the Company's common stock at a rate of one share of common stock per $1.00 of converting principal or interest, rounded down to the nearest share with any fractional amounts cancelled, at the election of Anderson by delivery of written notice to the Company. In addition, upon the consummation of a qualified equity financing of the Company prior to the Maturity Date, the aggregate outstanding principal balance of the October 2017 Convertible Note and all accrued and unpaid interest thereon may convert, at the option of Anderson, into that number of the securities issued and sold in such financing, determined by dividing (a) such aggregate principal and accrued interest amounts, by (b) the purchase price per share or unit paid by the purchasers of the Company's securities issued and sold in such financing. Notwithstanding the foregoing, Anderson's ability to affect any such conversions will be limited by applicable provisions governing issuances of shares of the Company's common stock under the rules of The Nasdaq Capital Market, subject to the Company's receipt of any applicable waivers thereof, and any amounts not issuable to Anderson in the Company's equity securities as a result of this limitation will be payable in cash.

On December 15, 2017, the Company entered into a securities purchase agreement (the "Purchase Agreement") with Anderson, affiliate of Anderson and certain other accredited investors (collectively, the "Buyers"). In conjunction with the transaction contemplated in the Purchase Agreement, Anderson was entitled to convert any portion of the balance outstanding under the October 2017 Convertible Note and any accrued interest into shares of the Company's common stock at a rate of one share of common stock per $0.50. Anderson's ability to affect conversions at the $0.50 rate was subject to, among other things, approval of the Company's shareholders, which had not been received as of December 31, 2017.

On December 22, 2017, the Company and Anderson amended and restated in its entirety the terms of the October 2017 Convertible Note ("Secured December 2017 Convertible Note"). The Secured December 2017 Promissory Note was a secured promissory note in the aggregate principal amount of up to $6,000,000, at Anderson's sole discretion, due on October 12, 2020 (the "Maturity Date"). As of December 31, 2017, the outstanding principal balance under the Secured December Convertible Note was $4,000,000, exclusive of a $510,000 discount. The interest rate and conversion terms of the Secured December 2017 Convertible Note remain unchanged from the terms of the October 2017 Convertible Note as described above.

The Company recognized a discount on the October 2017 Convertible Note in the amount of incurred $578,000 as a result of a derivative liability associated with this debt. This discount is being amortized to interest expenses over the expected remaining term of the note. The unamortized portion of these financing costs is $367,000 as of December 31, 2017.

7. Warrants

The following table summarizes information about the Company's common stock warrants outstanding as of December 31, 2017 (in thousands, except exercise price data):

DESCRIPTION	ISSUE DATE	EXPIRATION DATE	NUMBER OF SHARES SUBJECT TO WARRANTS ISSUED	EXERCISE PRICE
In connection with June 2013 Credit Facility (June 2013 Warrants)	June 2013	June 2023(1)	27	$ 8.40
In connection with August 2015 Senior Secured Promissory Notes (August 2015 Warrants)	August 2015	August 2023	4,000	1.91
In connection with October 2012 and April 2013 Secured Promissory Notes (November 2016 Warrants)	November 2016	November 2026	125	2.38
In connection with June 2017 Consulting Agreement (June 2017 Warrants)	June 2017	June 2027	80	1.10
			4,232	

(1) The June 2013 Warrants expire upon the earlier to occur of (i) the date listed above; (ii) the acquisition of the Company by another entity by means of any transaction or series of related transactions (including, without limitation, any transfer of more than 50% of the voting power of the Company, reorganization, merger or consolidation, but excluding any merger effected exclusively for the purpose of changing the domicile of the Company); or (iii) a sale of all or substantially all of the assets of the Company unless the Company's stockholders of record as constituted immediately prior to such acquisition or sale will, immediately after such acquisition or sale (by virtue of securities issued as consideration for the Company's acquisition or sale or otherwise), hold at least fifty percent (50%) of the voting power of the surviving or acquiring entity.

The June 2013 Warrants became exercisable on the date of the IPO. The August 2015 Warrants were immediately exercisable and remain exercisable subject to certain exceptions. The November 2016 Warrants were immediately exercisable and remain exercisable subject to certain exceptions. The November 2017 Warrants vested over a period of six months are fully exercisable as of December 31, 2017.

See Note 17 for discussion of additional warrants issued after December 31, 2017.

8. Common Stock

In August 2013, the Company amended and restated its certificate of incorporation to increase the number of shares of common stock authorized for issuance to 250,000,000 shares with a par value of $0.00001. As of December 31, 2017, the Company had reserved shares of common stock for future issuances as follows (in thousands):

	SHARES
Shares available for future grant under stock incentive plans	2,340
Stock options outstanding	3,121
Warrants to purchase common stock	4,232
Restricted stock units	822
Convertible notes payable	4,005
	14,520

9. Stock Option Plans

In July 2006, the Company authorized the 2006 Equity Incentive Plan, as amended, ("2006 Plan"). The 2006 Plan provided for the issuance of up to 1,434,000 shares of common stock underlying awards. The 2006 Plan was terminated in December 2011 and no new stock awards may be granted under the 2006 Plan.

The 2006 Plan allowed holders to exercise stock options prior to their vesting. The common stock received by the employee is restricted and follows the same vesting schedule as the underlying option. In the event the employee voluntarily or involuntarily terminates employment from the Company, the Company retains a right to repurchase the unvested common stock at the original option exercise price. As of December 31, 2017 and 2016, no options had been exercised that would be subject to repurchase.

As of December 31, 2017, options to purchase 215,000 shares of the Company's common stock at a weighted-average exercise price of $1.13 per share were outstanding under the 2006 Plan, of which 215,000 were vested. During the year ended December 31, 2017, 13,000 and 0 options were exercised and cancelled, respectively, under the 2006 Plan.

In July 2011, and as amended in September 2012, the Company authorized the 2011 Stock Plan ("2011 Plan"). The 2011 Plan provided for the issuance of up to 1,167,000 shares of common stock underlying awards, plus any shares of common stock underlying awards previously issued under the 2006 Plan that terminate or expire after the date of authorization of the 2011 Plan, subject to certain adjustments. In addition, the 2011 Plan provided that the Company not deliver more than 2,446,000 shares upon the exercise of incentive stock options issued under both the 2006 Plan and 2011 Plan. The 2011 Plan was terminated in August 2013 and no new stock awards may be granted under the 2011 Plan.

As of December 31, 2017, options to purchase 305,000 shares of the Company's common stock at a weighted-average exercise price of $7.41 per share were outstanding under the 2011 Plan, of which 305,000 were vested. During the year ended December 31, 2017, 1,000 and 17,000 options were exercised and cancelled, respectively, under the 2011 Plan.

In August 2013, the Company's board of directors adopted the 2013 Stock Incentive Plan ("2013 Plan") covering officers, employees, and directors of, and consultants to, the Company. Under the 2013 Plan, the Company may grant incentive stock options, non-qualified stock options, stock appreciation rights, restricted stock, restricted stock units and dividend equivalent rights. At the time the 2013 Plan was established, the maximum aggregate number of shares of the Company's common stock that could be issued pursuant to the 2013 Plan was 1,600,000, plus the number of shares of common stock that were reserved for issuance pursuant to future grants under the 2011 Plan at that time. The number of shares authorized for issuance pursuant to the 2013 Plan automatically increases by any additional shares that would have otherwise returned to the 2011 Plan as a result of the forfeiture, termination or expiration of awards previously granted under the 2011 Plan. In addition, the number of shares authorized for issuance pursuant to the 2013 Plan will increase by a number equal to the lesser of (i) 3.5% of the number of shares of the Company's common stock outstanding on the last day of the immediately preceding fiscal year or (ii) a lesser number of shares determined by the administrator.

As of December 31, 2017, options to purchase 2,601,000 shares of the Company's common stock at a weighted-average exercise price of $5.58 per share were outstanding under the 2013 Plan, of which 1,604,000 were vested. During the year ended December 31, 2017, 0 and 361,000 options were exercised and cancelled, respectively, under the 2013 Plan.

Generally, options vest 25% on the first anniversary from the date of grant and 1/48 per month thereafter ("Standard Vesting Terms"); however, options may be granted with different vesting terms as determined by the Company's board of directors. During the year ended December 31, 2017, the Company granted 124,000 options with Standard Vesting Terms. During the year ended December 31, 2017, the Company granted restricted stock units under the 2013 Plan. The vesting periods for the restricted stock are subject to board approval and during the year ended December 31, 2017 varied from immediate to 36 months. During the year ended December 31, 2015, the Company granted restricted stock units under the 2013 Plan. On the date of grant, 7/12 of the restricted stock units vested immediately with 5/12 vesting equally over the five monthly anniversaries following the date of issuance of the award. One share of common stock is issuable for each vested restricted stock unit upon the earlier of the grantee's separation of service or a change in control in the case of non-employee directors, or in the case of employees the board can decide to provide for the immediate issuance of common stock once vesting has occurred. As of December 31, 2017, there were 822,000 restricted stock units outstanding under the 2013 Plan.

The following table summarizes the activity under the Company's stock option plans for the year ended December 31, 2017 (in thousands, except exercise price and remaining contractual life data):

	SHARES OUTSTANDING	WEIGHTED-AVERAGE EXERCISE PRICE	WEIGHTED-AVERAGE REMAINING CONTRACTUAL LIFE (IN YEARS)	AGGREGATE INTRINSIC VALUE
Balances at December 31, 2016	3,397	$ 5.62	7.9	$ 1,599
Options granted	124	1.40		
Options exercised	(14)	1.21		
Options cancelled	(386)	5.77		
Balances at December 31, 2017	3,121	5.45	6.9	114
Vested and expected to vest at December 31, 2017	2,847	5.81	6.8	95
Exercisable at December 31, 2017	2,124	7.19	6.2	47

The total intrinsic value of options exercised during the years ended December 31, 2017, 2016 and 2015 was $12,000, $20,000 and $35,000, respectively.

The estimated fair value of options vested during the years ended December 31, 2017, 2016 and 2015 was $2,066,000, $2,466,000 and $4,950,000, respectively. The weighted-average estimated fair value of options granted during the years ended December 31, 2017, 2016 and 2015 was $0.63 per share, $0.61 per share and $0.75 per share, respectively.

During the years ended December 31, 2017, 2016 and 2015, the Company recorded share-based compensation expense related to stock options of $1,937,000, $2,471,000 and $3,715,000, respectively. During the years ended December 31, 2017, 2016 and 2015, the Company did not realize any tax benefit associated with its share-based compensation expense as certain of the option grants were incentive stock options for which share-based compensation expense is not deductible and as a result of the full valuation allowance on the Company's deferred tax assets (see Note 12).

As of December 31, 2017, the total share-based compensation expense related to unvested options granted to employees under the Company's stock option plans but not yet recognized was $521,000. This expense will be recognized on a straight-line basis over a weighted-average remaining term of 2.0 years. The following table summarizes shares available for grant under the Company's stock incentive plans for the year ended December 31, 2017 (in thousands):

	SHARES AVAILABLE FOR GRANT
Balances at December 31, 2016	1,622
Shares authorized	863
Options granted	(124)
Options cancelled	386
Restricted stock units granted	(407)
Balances at December 31, 2017	2,340

The following table summarizes the activity of restricted stock units for the year ended December 31, 2017 (in thousands, except weighted average grant date fair value):

	SHARES OUTSTANDING	WEIGHTED AVERAGE GRANT DATE FAIR VALUE
Nonvested at December 31, 2016	350	$ 0.75
Granted	407	1.07
Vested	(422)	0.89
Nonvested at December 31, 2017	335	$ 0.94

The fair value of restricted stock units is determined based on the closing bid price of the Company's common stock on the date of grant. During the years ended December 31, 2017, 2016 and 2015, the Company recognized $123,000, $198,000 and $96,000, respectively, of share-based compensation expense related to restricted stock units. Total share-based compensation expense related to restricted stock units not yet recognized as of December 31, 2017 was $314,000, which is expected to be recognized over a weighted average period of 1.3 years.

10. Capital Leases

The Company accounts for certain equipment acquired under financing arrangements as capital leases. This equipment is included in property, plant and equipment, and amortization of assets under capital leases is included in depreciation expense. As of December 31, 2017, the Company had no equipment acquired under capital leases. As of December 31, 2016 the cost of this equipment was $1,904,000 and accumulated amortization was $473,000.

Amortization of capital leases during the years ended December 31, 2017, 2016 and 2015 totaled $194,000, $265,000 and $1,567,000, respectively.

11. Commitments and Contingencies

Operating Leases

The Company has a non-cancelable lease for an aggregate of approximately 24,500 square feet of non-contiguous office space in an office complex in Davis, California under which a portion of the covered space terminated beginning in February 2014. The remaining portion of the space terminated in October 2016. The lease includes negotiated annual increases in the monthly rental payments.

In September 2013 and then amended in April 2014, the Company entered into a lease agreement for approximately 27,300 square feet of office and laboratory space located in Davis, California. The initial term of the lease is for a period of 60 months and commenced in August 2014. The monthly base rent is $44,000 per month for the first 12 months with a 3% increase each year thereafter. Concurrent with this amendment, in April 2014, the Company entered into a lease agreement with an affiliate of the landlord to lease approximately 17,400 square feet of office and laboratory space in the same building complex in Davis, California. The initial term of the lease is for a period of 60 months and commenced in August 2014. The monthly base rent is $28,000 with a 3% increase each year thereafter.

The Company recognizes expense under its operating leases on a straight-line basis over the terms of the leases. As of December 31, 2017, the Company's aggregate contractual future minimum lease payments under non-cancelable lease agreements is as follows (in thousands):

	OPERATING LEASES
Year Ended December 31,	
2018	949
2019	615
Total minimum payments required	$ 1,564

The Company incurred rent expense of $625,000, $959,000 and $1,102,000, during the years ended December 31, 2017, 2016 and 2015, respectively.

On January 19, 2016, the Company entered into an agreement with a sublessee to sublease approximately 3,800 square feet of vacant office space located in Davis, California pursuant to the terms of its lease agreement. The initial term of the sublease is for a period of approximately 43 months and commenced on February 1, 2016. The monthly base rent is approximately $5,000 per month for the first 12 months with a 5% increase each year thereafter. The Company recognized $60,000 from the sublease which offset the rental expense for the years ended December 31, 2017 and 2016.

Litigation

On September 5, 2014, September 8, 2014, September 11, 2014, September 15, 2014 and November 3, 2014, the Company, along with certain of its current and former officers and directors and others were named as defendants in putative securities class action lawsuits filed in the U.S. District Court for the Eastern District of California. On February 13, 2015, these actions were consolidated as *Special Situations Fund III QP, L.P. et al v. Marrone Bio Innovations, Inc. et al* , Case No 2:14-cv-02571-MCE-KJN. On September 2, 2015, an initial consolidated complaint was filed on behalf of (i) all persons who purchased or otherwise acquired the Company's publicly traded common stock directly in or traceable to the Company's August 1, 2013 initial public offering; (ii) all persons who purchased or otherwise acquired the Company's publicly traded common stock directly in the Company's June 6, 2014 secondary offering; and (iii) all persons who purchased or otherwise acquired the Company's publicly traded common stock on the open market between March 7, 2014 and September 2, 2014 (the "Class Action"). the initial consolidated complaint also named certain of the Company's current and former officers and directors and the Company's independent registered public accounting firm as defendants. The initial consolidated complaint alleged violations of the Securities Act of 1933, the Securities Exchange Act of 1934 and SEC Rule 10b-5, arising out of the issuance of allegedly false and misleading statements about the Company's business and prospects, including its financial statements, product revenues and system of internal controls. An amended consolidated complaint was filed on January 11, 2016. On March 15, 2016, lead plaintiffs moved to amend their consolidated complaint to, among other things, assert claims on behalf of all persons who purchased or otherwise acquired the Company's securities on the open market between August 1, 2013 and November 10, 2015. On April 4, 2016, counsel for the Company and its current and former officer and directors, counsel for the Company's primary and excess directors' and officers' liability insurers, and counsel for lead plaintiffs attended a private mediation before Jed D. Melnick at the JAMS offices in New York, New York. On May 25, 2016, the parties executed a final stipulation of settlement and lead plaintiff's counsel filed an unopposed motion for preliminary approval of the settlement. The stipulation provided for dismissal of the action as to the Company and the officer and director defendants, and a payment by the Company's insurers of $12.0 million to an escrow account, to be distributed upon order of the court. On May 27, 2016, the Federal Court approved lead plaintiffs' motion to amend their consolidated complaint. At the Federal Court's request, the settling parties revised the stipulation and papers in support of preliminary approval to reflect the amended consolidated complaint, and refiled for preliminary approval of the settlement on June 16, 2016. On July 8, 2016, the Federal Court granted preliminary approval of the class action settlement. On September 27, 2016, the Federal Court granted final approval of the settlement.

On September 9, 2014 and November 25, 2014, shareholder derivative actions were filed in the Superior Court of California, County of Yolo (Case No. CV14-1481) and the U.S. District Court for the Eastern District of California (Case No. 1:14-cv-02779-JAM-CKD), purportedly on the Company's behalf, against certain current and former officers and members of its board of directors (the "2014 Derivative Actions"). The plaintiffs in the 2014 Derivative Actions allege that the defendants breached their fiduciary duties, committed waste, were unjustly enriched and aided and abetted breaches of fiduciary duty by causing the Company to issue allegedly false and misleading statements.

On October 14, 2015, a shareholder derivative action was filed in the Superior Court of California, County of Yolo (Case No. CV15-1423), purportedly on the Company's behalf, against certain current and former officers and members of the Company's board of directors and the Company's independent registered public accounting firm (the "2015 Derivative Action," and with the 2014 Derivative Actions, the "Derivative Actions"). The plaintiff in the 2015 Derivative Action alleged that the director and officer defendants breached their fiduciary duties, committed waste and were unjustly enriched by causing the Company to issue allegedly false and misleading statements and that the Company's independent registered public accounting firm committed professional negligence and malpractice. The issues in the 2014 Derivative Actions and 2015 Derivative Action overlap substantially with those at issue in the Class Action described above. On November 15, 2016, the Company, in its capacity as a nominal defendant, entered into a stipulation of settlement (the "Stipulation") in the Derivative Actions. On January 11, 2017, the Superior Court of California, County of Yolo entered an order preliminarily approving the settlement set forth in the Stipulation, and on April 5, 2017, it entered the final order and judgment approving the settlement set forth in the Stipulation. The Stipulation provides for dismissal of the shareholder derivative actions as to the Company, the certain current and former officers and members of the board of directors and the Company's independent registered public accounting firm, and the Company agrees to adopt or maintain certain corporate governance reforms for at least four years. The Stipulation also provides for attorneys' fees and expenses to be paid by the Company's insurers to plaintiffs' counsel. On June 22, 2017, plaintiffs in the derivative action in the U.S. District Court for the Eastern District of California filed a Notice of Voluntary Dismissal with Prejudice, and the case was closed on June 23, 2017.

SEC Investigation

In September 2014, the Company advised the staff of the Division of Enforcement of the SEC that the Audit Committee of the Company's board of directors had commenced an internal investigation. The SEC commenced a formal investigation of these matters, and in February 2016, the Company entered into a settlement agreement with the SEC. In agreeing to the settlement, the Company neither admits nor denies the SEC's allegations that the Company violated certain provisions of the Securities Act of 1933 and the Securities Exchange Act of 1934. Under the terms of the settlement agreement, the Company paid a $1,750,000 civil penalty in March 2016 and consented to an injunction against future violations of such laws. The Company had previously recorded expenses of $1,750,000 in its consolidated statements of operations for the year ended December 31, 2014 for an accrual of its estimate of the penalties arising from such enforcement action.

12. Income Taxes

As of December 31, 2017, the Company had net operating loss carryforwards for federal income tax reporting purposes of $215,973,000, which begin to expire in 2026, and California and various other state net operating loss carryforwards of $134,256,000 and $44,904,000, respectively, which will expire from 2028 through 2037. In addition, as of December 31, 2017, the Company had federal research and development tax credit carryforwards of $2,316,000, which begin to expire in 2026, and state research and development tax credit carryforwards of $2,476,000, which have no expiration date.

The Company's ability to utilize its federal and state net operating loss carryforwards and federal and state tax credit carryforwards to reduce future taxable income and future taxes, respectively, may be subject to restrictions attributable to equity transactions that may have resulted in a change in ownership as defined by Internal Revenue Code ("IRC") Section 382. In the event that the Company has such a change in ownership, the Company's utilization of these carryforwards could be severely restricted and could result in the expiration of a significant amount of these carryforwards prior to the Company recognizing their benefit.

As of December 31, 2017, deferred tax assets of $64,531,000, arising primarily as a result of the Company's net operating loss carryforwards, tax credits and certain costs capitalized for tax purposes, were fully offset by a valuation allowance. The valuation allowance decreased $15,473,000 for the year ended December 31, 2017 and increased by $11,035,000 and $15,241,000 during the years ended December 31, 2016 and 2015, respectively.

The temporary timing differences that give rise to the deferred tax assets are as follows (in thousands):

	DECEMBER 31,	
	2017	2016
Components of deferred taxes:		
Net operating loss carryforwards	$ 56,945	$ 71,329
Research and development tax credits	3,202	2,670
Other, net	4,384	6,005
Net deferred tax assets	64,531	80,004
Less valuation allowance	(64,531)	(80,004)
Net deferred tax assets	$ —	$ —

The Company had no deferred tax liabilities as of December 31, 2017 and 2016.

The Company recognized no income tax expense and received no benefit from income taxes during the years ended December 31, 2017, 2016 and 2015. The provision for income taxes is different than the amount computed using the applicable statutory federal income tax rate with the difference for each year summarized below:

	DECEMBER 31,		
	2017	2016	2015
Federal tax benefit at statutory rate	34%	34%	34%
State tax benefit, net of federal benefit	3	4	5
Interest expense	(2)	(1)	(1)
Share-based compensation expense	5	(1)	(2)
Other	—	(1)	—
Change in federal deferred tax rate	(90)		
Adjustment due to change in valuation allowance	50	(35)	(36)
Provision for income taxes	—%	—%	—%

As of December 31, 2017, the Company had unrecognized tax benefits of $1,201,000. The unrecognized tax benefits, if recognized, would not impact the Company's effective tax rate as the recognition of these tax benefits would be offset by changes in the Company's valuation allowance. The Company does not believe there will be any material changes in its unrecognized tax position during the next twelve months.

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

	DECEMBER 31, 2017	DECEMBER 31, 2016	DECEMBER 31, 2015
Balance at January 1	$ 1,083	$ 982	$ 853
Increase related to prior year tax positions	—	—	—
Increase related to current year tax positions	118	101	129
Balance at December 31	$ 1,201	$ 1,083	$ 982

The Company files income tax returns in the U.S. federal jurisdiction and various state jurisdictions. The Company is subject to U.S. federal and state income tax examination for 2007 through 2016 due to unutilized net operating loss carryforwards and research and development tax credit carryforwards.

The Tax Cuts and Jobs Act (the "Act") was enacted on December 22, 2017. The Act reduces the US federal corporate tax rate from 35% to 21%. As of December 31, 2017, the Company has not completed the accounting for the tax effects of enactment of the Act; however, as described below, it has made a reasonable estimate of the effects on existing deferred tax balances. These amounts are provisional and subject to change. The most significant impact of the legislation for the Company was a $27,971,000 reduction of the value of the Company's net deferred tax assets (which represent future tax benefits) as a result of lowering the U.S. corporate income tax rate from 35% to 21%. The Company will continue to refine its calculations of these provisional amounts as additional analysis is completed. In addition, the Company's estimates for these provisional amounts may also be affected as the Company gains more thorough understanding of the tax law or as future guidance from the Internal Revenue Service or state tax agencies is issued.

In December 2017, the Securities and Exchange Commission staff issued Staff Accounting Bulletin No. 118, which addresses how a company recognizes provisional amounts when a company does not have the necessary information available, prepared or analyzed (including computations) in reasonable detail to complete its accounting for the effect of the changes in the Tax Act. The measurement period ends when a company has obtained, prepared and analyzed the information necessary to finalize its accounting, but cannot extend beyond one year.

13. Employee Benefit Plan

The Company offers a defined contribution plan to all eligible employees, which is qualified under Section 401(k) of the IRC. The Company currently provides a matching contribution based on a formula which provides for a dollar-for-dollar matching contribution of the employee's 401(k) contribution up to 3% of eligible pay plus a 50% matching contribution on the employee's 401(k) contribution between 3% and 5% of eligible pay. Each participant is 100% vested in elective contributions and the Company's matching contribution. The Company provided 401(k) matching contributions during the years ended December 31, 2017, 2016 and 2015 of $317,000, $282,000 and $330,000, respectively.

14. Related Party Transactions

August 2015 Senior Secured Promissory Notes

On August 20, 2015, the Company entered into a purchase agreement with Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy Funds VIP Science and Technology, each an affiliate of Waddell & Reed, which is a beneficial owner of more than 5% of the Company's common stock. Pursuant to such purchase agreement, the Company sold to such affiliates senior secured promissory notes ("August 2015 Senior Secured Promissory Notes") in the aggregate principal amount of $40,000,000. The August 2015 Senior Secured Promissory Notes bear interest at a rate of 8% per annum payable semi-annually on June 30 or December 31 of each year, commencing on December 31, 2015, with $10,000,000 payable three years from the closing, $10,000,000 payable four years from the closing and $20,000,000 payable five years from the closing. Debt due to related parties as of December 31, 2017 was $37,822,000, net of unamortized debt discount of $2,178,000. The fair value of the Company's debt due to related parties was $21,714,000 as of December 31, 2017. This debt was valued by applying the same ratio of the value of common stock the lender agreed to take as consideration for a reduction in the outstanding principal balance and applying this ratio to the outstanding principal balance. This is further discussed below and in Note 17.

The August 2015 Senior Secured Promissory Notes contain customary covenants. In addition, from the date of the agreement through May 31, 2016, these notes contained the contractual obligation to maintain cash and cash equivalents of at least $15,000,000. On May 31, 2016, the terms of the August 2015 Secured Promissory Notes were amended to remove this minimum cash balance requirement. From the date of this agreement through May 31, 2016, $15,000,000 had been recorded as restricted cash and included in non-current assets.

During 2015, the Company incurred $302,000 in financing-related costs, primarily legal fees. These costs were recorded as deferred financing costs as a component of current and non-current other assets and are being amortized to interest expense over the term of the arrangement.

The August 2015 Senior Secured Promissory Notes are secured by substantially all the Company's personal property assets. The agent, acting on behalf of the lenders, shall be entitled to have a first priority lien on the Company's intellectual property assets, pursuant to intercreditor arrangements with certain of the Company's existing lenders.

In connection with the August 2015 Senior Secured Promissory Notes, the Company issued warrants ("August 2015 Warrants") to purchase 4,000,000 shares of common stock of the Company. The August 2015 Warrants are immediately exercisable at an exercise price of $1.91 per share and may be exercised at a holder's option at any time on or before August 20, 2023 (subject to certain exceptions). The fair value of the August 2015 Warrants at the date of issuance of $4,610,000 was recorded as a discount to the August 2015 Senior Secured Promissory Notes as a component of non-current other liabilities and is being amortized to interest expense to related parties over the term of the arrangement.

The August 2015 Senior Secured Promissory Notes provide for various events of default, including, among others, default in payment of principal or interest, breach of any representation or warranty by the Company or any subsidiary under any agreement or document delivered in connection with the notes, a continued breach of any other condition or obligation under any loan document, certain bankruptcy, liquidation, reorganization or change of control events, the acquisition by any person or persons acting as group, other than the lenders, of beneficial ownership of 40% or more of the outstanding voting stock of the Company and certain events in which Pamela G. Marrone, Ph.D. ceases to serve as the Company's Chief Executive Officer. Upon an event of default, the entire principal and interest may be declared immediately due and payable. As of December 31, 2017, the Company was in compliance with its covenants under the August 2015 Senior Secured Promissory Notes.

On December 15, 2017, the Company entered into an amendment to change the terms of the October 2012 and April 2013 Secured Promissory Notes. The terms of the amendment were contingent upon the financing contemplated in the Purchase Agreement. See Note 17 for further discussion of the transaction contemplated by Waddell Notes Amendment.

The Tremont Group, Inc.

Les Lyman, a former member of the Company's board of directors, is the chairman and significant indirect shareholder of The Tremont Group, Inc. In January 2016, Les Lyman resigned from the Company's board of directors effective January 4, 2016. Accordingly, revenue recognized for sales to The Tremont Group, Inc. subsequent to January 4, 2016 were not included in related party revenues, and no revenues were recognized for such sales during the years ended December 31, 2017 and 2016. During the year ended December 31, 2015 $492,000 was recognized on a sell-through basis relating to product purchased by The Tremont Group, Inc. that was resold by The Tremont Group, Inc. during the period.

15. Public Offerings

In December 2016, the Company filed a shelf a registration statement on Form S-3 with the SEC that provides for the sale and issuance of up to $50.0 million of the Company's common stock, preferred stock, debt securities, warrants, rights and/or units, including the ability to sell up to $15.0 million of the Company's common stock through an at-the-market ("ATM") program in accordance with an offering agreement the Company entered into with H.C. Wainwright. The Company began selling common shares under this registration statement in January 2017. As of December 31, 2017, the Company had sold 104,000 shares of common stock under at-the-market program at a weighted average exercise price of $2.22 per share for proceeds (net of commission) of $0.2 million, and $14.8 million remained available for sale under the agreement with H.C. Wainwright. In April 2017, the Company completed a public offering of 6,571,000 registered shares of its common stock (inclusive of 857,000 shares of its common stock to cover over-allotments). The public offering price of the shares sold in the offering was $1.40 per share. The total gross proceeds to the Company from the offerings were $9,200,000. Exclusive of the ATM discussed above, $25.8 million remained available for sale under the shelf registration statement as of December 31, 2017. The aggregate net proceeds to the Company from common stock sold under the shelf registration totaled approximately $8,188,000. Inclusive of the ATM, $41.6 million remained available for sale under the shelf registration statement.

16. Quarterly Financial Information (Unaudited)

	MARCH 31, 2017	JUNE 30, 2017	SEPTEMBER 30, 2017	DECEMBER 31, 2017
	(In thousands, except per share data)			
Total revenues	$ 4,154	$ 6,476	$ 4,219	$ 3,318
Gross profit (loss)	1,875	2,510	1,727	1,527
Net loss	(7,629)	(7,385)	(8,530)	(7,381)
Basic and diluted net loss per common share	$ (0.31)	$ (0.25)	$ (0.27)	$ (0.24)

	MARCH 31, 2016	JUNE 30, 2016	SEPTEMBER 30, 2016	DECEMBER 31, 2016
	(In thousands, except per share data)			
Total revenues	$ 2,669	$ 5,049	$ 3,634	$ 2,690
Gross profit (loss)	400	1,931	1,141	1,048
Net loss	(9,276)	(6,783)	(7,202)	(7,810)
Basic and diluted net loss per common share	$ (0.38)	$ (0.28)	$ (0.29)	$ (0.32)

17. Subsequent Event

Equity Financing and Debt Conversion to Equity

On December 15, 2017, the Company entered into a securities purchase agreement (the "Purchase Agreement") with certain investors named therein, including Ospraie Ag Science LLC ("Ospraie"). On February 5, 2018, pursuant to the Purchase Agreement, the Company issued to these investors, an aggregate of 40,000,001 units, with each unit purchased consisting of one share of the Company's common stock and one warrant to purchase one share of common stock, and each unit purchased by the investors consisting of one share of common stock and one warrant to purchase 0.8 shares of Common Stock, for an aggregate purchase price of $30,000,000, including the conversion to units of all aggregate principal amounts outstanding under the Purchase Agreement. Also on February 5, 2018, the Company converted, pursuant to an amendment, dated December 15, 2017, to the senior August 2015 Senior Secured Promissory Notes $35,000,000 aggregate principal amount of the August 2015 Senior Secured Promissory Notes into an aggregate of 20,000,000 shares of common stock and warrants to purchase 4,000,000 shares of common stock (such conversion, the "Waddell Debt Conversion"), such that $5,000,000 of principal under the August 2015 Senior Secured Promissory Notes now remains outstanding.

Simultaneously with the Waddell Debt Conversion, the maturity of the August 2015 Senior Secured Promissory Notes was extended to December 31, 2022, all interest payments under the August 2015 Senior Secured Promissory Notes was deferred to maturity on December 31, 2022, and Ospraie was granted a right of first refusal to acquire the August 2015 Senior Secured Promissory Notes. As result of the extension of the maturity dates on the August 2015 Senior Secured Promissory Notes, the Company reclassified portions of these notes from short term to long term as of December 31, 2017.

Also on February 5, 2018, the Company converted, pursuant to an amendment, dated December 15, 2017, to the October 2012 and April 2013 Secured Promissory Notes, $10,000,000 aggregate principal amount of indebtedness outstanding under the October 2012 and April 2013 Secured Promissory Notes to an aggregate of 5,714,285 shares of common stock and warrants to purchase 1,142,856 shares of common stock (such conversion, the "Snyder Debt Conversion"), such that $2,450,000 of principal under the October 2012 and April 2013 Secured Promissory Notes now remains outstanding. Simultaneously with the Snyder Debt Conversion, the maturity of the October 2012 and April 2013 Secured Promissory Notes was extended to December 31, 2022, the interest was reduced from 14% to 8% and all interest payments under the October 2012 and April 2013 Secured Promissory Notes were deferred to the maturity of the October 2012 and April 2013 Secured Promissory Notes on December 31, 2022. As result of the extension of the maturity dates on the August 2015 Senior Secured Promissory Notes, the Company reclassified portions of these notes from short term to long term as of December 31, 2017.

In addition, in connection with its role as exclusive placement agent and financial adviser with respect to the transactions contemplated by the Purchase Agreement, National Securities Corporation (the "Placement Agent") received warrants to purchase 2,017,143 shares of Common Stock, as well as 800,000 shares of Common Stock.

The closing of the transactions contemplated by the Purchase Agreement, the Waddell Notes Amendment and the Snyder Loan Amendment (the "Transactions") were subject to, among other conditions, the Company having obtained the approval of its stockholders at the Company's 2017 Annual Meeting of Stockholders, which was held on January 31, 2018 (the "Annual Meeting"). At the Annual Meeting, the Company's stockholders approved each of three proposals related to the Transactions.

The Company has not yet determined the financial statement impact of these transactions on its financial statements.

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

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Disclosure controls and procedures are controls and other procedures that are designed to ensure that information required to be disclosed in our reports filed or submitted under the Securities Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed in our reports filed under the Exchange Act is accumulated and communicated to management, including our principal executive officer and our principal financial officer, as appropriate, to allow timely decisions regarding required disclosure. As of the end of the period covered by this report, we carried out an evaluation under the supervision and with the participation of our management, including our Chief Executive Officer (CEO) and our Chief Financial Officer (CFO), of the effectiveness of the design and operation of our disclosure controls and procedures in ensuring that material information required to be disclosed in our reports filed or submitted under the Exchange Act, has been made known to them in a timely fashion. Based on this evaluation, our CEO and CFO concluded that the Company's disclosure controls and procedures were not effective as of December 31, 2017 due to a material weakness in the Company's internal control over financial reporting which is disclosed below.

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 Rule 13a-15(f) of the Exchange Act. Our management assessed, with the oversight of the board of directors, the effectiveness of our internal control over financial reporting as of December 31, 2017. In making this assessment, management used the criteria established in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on this assessment, management has concluded that our internal control over financial reporting was not effective as of December 31, 2017 due to a material weaknesses in the Company's internal control over financial reporting, which is disclosed below.

Material Weaknesses and Remediation Activities

A "material weakness" is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis. In connection with management's assessment of our internal control over financial reporting described above, management has identified a specific deficiency related to controls over accounting for complex financial instruments that constituted a material weakness in our internal controls over financial reporting as of December 31, 2017. We did not maintain effective internal controls related to the accounting for embedded derivative instruments that were a part of certain loan instruments that we entered into during the year ended December 31, 2017 and the related debt issuance costs. Specifically, this material weakness resulted in material misstatements and audit adjustments to derivative liability, debt discounts, interest expense, change in fair value of financial instruments and additional paid-in capital to the consolidated financial statements for the year ended December 31, 2017. This material weakness could result in future misstatements of the aforementioned accounts that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected on a timely basis.

Management is developing and implementing a plan to remediate this material weakness. Management is also designing additional controls around identification, documentation and application of technical accounting guidance with particular emphasis on events outside the ordinary course of business. These controls are expected to include the use of third-party specialists and performance of additional supervision and review activities by qualified personnel, the preparation of formal accounting memoranda to support our conclusions on technical accounting matters, and the development and use of checklists and research tools to assist in compliance with GAAP with regard to complex accounting issues. We intend to complete the implementation of our remediation plan during the first half of 2018. We have engaged a third-party provider to help us assess and improve our internal controls. The process of designing and implementing an effective financial reporting system is a continuous effort that requires us to anticipate and react to changes in our business and the economic and regulatory environments and to expend significant resources to maintain a financial reporting system that is adequate to satisfy our reporting obligations. Management will continue to evaluate and take actions to improve our internal control over financial reporting. Management may determine to take additional actions to address control deficiencies or determine to modify certain of the remediation measures described above.

As management continues to evaluate our internal control over financial reporting, management may determine that additional measures should be taken to address these or other control deficiencies, and/or that the remediation plan should modified. Notwithstanding the identified material weakness in our internal control over financial reporting, specifically related to derivative accounting, management has concluded that the financial statements and other financial information included in this Annual Report on Form 10-K fairly present in all material respects our financial condition, results of operations and cash flows as of, and for, the periods presented.

Changes in Internal Control

We have continued to modify our existing internal controls infrastructure, as well as to add supplemental compensating manual processes and internal controls, as we adapt to our enterprise resource planning ("ERP") system which we began implementing during the fourth quarter of 2016 and started to use during the second quarter of 2017. Other than the changes related to the implementation of our ERP system and the remediation actions which we just began implementing to address the accounting for the derivative and debt issuance costs; there were no other changes in our internal control over financial reporting identified in management's evaluation pursuant to Rules 13a-15(d) or 15d-15(d) of the Exchange Act during the quarter ended December 31, 2017 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable, not absolute, assurance of achieving the desired control objectives. Because of the inherent limitations in internal control over financial reporting, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within the Company have been detected. These inherent limitations include the realities that judgments in decision making can be faulty and that breakdowns can occur because of a simple error or mistake. 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. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply judgment in evaluating the benefits of possible controls and procedures relative to their costs. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

ITEM 9B. OTHER INFORMATION

The following discussion relates to “Proposal Five—2013 Plan Approvals” of our Proxy Statement for the 2017 Annual Meeting of Stockholders (“Proposal Five”).

Proposal Five, which was approved by our shareholders on January 31, 2018, increased the number of shares authorized under our 2013 Stock Incentive Plan, as amended (the “2013 Plan”), by 4,000,000 shares, and approved the 2013 Plan for purposes of Section 162(m) of the Internal Revenue Code of 1986, as amended (“Section 162(m)”). Section 162(m) generally denies a corporation’s tax deduction for compensation it pays to certain executive officers in excess of $1,000,000 per year for each such officer. Prior to enactment of the Tax Cuts and Jobs Act (the “Act”) on December 22, 2017, however, Section 162(m) provided an exception to this limitation for certain performance-based compensation if, among other things, the material terms of the arrangement under which such compensation is paid were approved by the corporation’s stockholders (the “Performance-Based Exception”).

Under the Act, the Performance-Based Exception was repealed with respect to taxable years beginning after December 31, 2017. In light of the Act, the Company confirms that it will not grant any future awards under the 2013 Plan that is intended to meet the Performance-Based Exception.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item will be contained in our definitive Proxy Statement for the Annual Meeting of Shareholders and is incorporated herein by reference.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item will be contained in our definitive Proxy Statement for the Annual Meeting of Shareholders and is incorporated herein by reference.

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

The information required by this item will be contained in our definitive Proxy Statement for the Annual Meeting of Shareholders and is incorporated herein by reference.

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

The information required by this item will be contained in our definitive Proxy Statement for the Annual Meeting of Shareholders and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item will be contained in our definitive Proxy Statement for the Annual Meeting of Shareholders and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

We have filed the following documents as part of this Form 10-K:

1. Consolidated financial statements:

	Page
Report of Independent Registered Public Accounting Firm	82
Consolidated Balance Sheets as of December 31, 2017 and 2016	83
Consolidated Statements of Operations for the years ended December 31, 2017, 2016 and 2015	84
Consolidated Statements of Comprehensive Loss for the years ended December 31, 2017, 2016 and 2015	85
Consolidated Statements of Stockholders' Equity (Deficit) for the years ended December 31, 2017, 2016 and 2015	86
Consolidated Statements of Cash Flows for the years ended December 31, 2017, 2016 and 2015	87
Notes to Consolidated Financial Statements	88

2. Financial Statement Schedules

All schedules have been omitted because they are not required, not applicable, not present in amounts sufficient to require submission of the schedule, or the required information is otherwise included.

3. Exhibits

See the Exhibit Index immediately preceding the signature page of this Annual Report on Form 10-K, which is incorporated by reference here.

ITEM 16. FORM 10-K SUMMARY

The Company has elected not to include summary information.

INDEX TO EXHIBITS

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	INCORPORATED BY REFERENCE FORM	FILE NO.	EXHIBIT NUMBER	FILING DATE	FILED HEREWITH
3.1	Fourth Amended and Restated Certificate of Incorporation of Marrone Bio Innovations, Inc.	10-K	001-36030	3.1	March 25, 2014	
3.2	Third Amended and Restated Bylaws of Marrone Bio Innovations, Inc.	8-K	001-36030	3.1	August 8, 2017	
4.1	Form of Marrone Bio Innovations, Inc.'s common stock certificate.	S-1/A	333-189753	10.4	July 22, 2013	
4.2	Form of Senior Secured Promissory Notes issued by Marrone Bio Innovations, Inc. to Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy Funds VIP Science & Technology dated August 20, 2015.	8-K	001-36030	4.1	August 25, 2015	
4.3	Form of Warrants issued by Marrone Bio Innovations, Inc. to Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy Funds VIP Science & Technology dated August 20, 2015.	8-K	001-36030	4.2	August 25, 2015	
4.4	Form of Warrants issued by Marrone Bio Innovations, Inc. pursuant to the Third Amendment to Loan Agreement, dated as of November 11, 2016, by and between Marrone Bio Innovations, Inc. and Gordon Snyder, as agent.					X
4.5	Warrant issued by Marrone Bio Innovations, Inc. to MZHCI, LLC, dated June 6, 2017.	10-Q	001-36030	4.1	August 14, 2017	
4.6	Form of Warrants issued by Marrone Bio Innovations, Inc. on February 5, 2018 to the Buyers listed in that certain Securities Purchase Agreement dated December 15, 2017.	8-K	001-36030	4.1	December 18, 2017	
4.7	Form of Warrants issued by Marrone Bio Innovations, Inc. on February 5, 2018 to Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy VIP Science & Technology.	8-K	001-36030	4.2	December 18, 2017	
4.8	Form of Warrants issued by Marrone Bio Innovations, Inc. on February 5, 2018 to Gordon Snyder, as agent to that certain Loan Agreement, as amended.	8-K	001-36030	4.3	December 18, 2017	
4.9	Form of Warrants issued by Marrone Bio Innovations, Inc. on February 5, 2018 to National Securities Corporation and certain of its affiliates.	8-K	001-36030	4.3	December 18, 2017	

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	INCORPORATED BY REFERENCE				FILED HEREWITH
		FORM	FILE NO.	EXHIBIT NUMBER	FILING DATE	
10.1(a)	Office Lease, dated September 9, 2013, by and between Bio Innovations, Inc. and Six Davis, LLC.	10-Q	001-36030	10.1	September 13, 2013	
10.1(b)	First Amendment to Lease, dated April 30, 2014, by and between Marrone Bio Innovations, Inc. and Six Davis, LLC.	10-Q	001-36030	10.3	May 15, 2014	
10.2	Office Lease, dated April 30, 2014, by and between Marrone Bio Innovations, Inc. and Seven Davis, LLC.	10-Q	001-36030	10.4	May 15, 2014	
10.3#	Marrone Bio Innovations, Inc. Stock Option Plan and related documents.	S-1	333-189753	10.1	July 1, 2013	
10.4#	Marrone Bio Innovations, Inc. 2011 Stock Plan and related documents.	S-1	333-189753	10.2	July 1, 2013	
10.5#	Marrone Bio Innovations, Inc. 2013 Stock Incentive Plan and related documents.	S-1/A	333-189753	10.3	July 22, 2013	
10.6#	Indemnification Agreement by and between Marrone Bio Innovations, Inc. and each of its directors and executive officers.	S-1/A	333-189753	10.4	July 22, 2013	
10.7#	Offer letter, dated June 29, 2006, between Marrone Organic Innovations, Inc. and Dr. Pamela G. Marrone.	S-1	333-189753	10.5	July 1, 2013	
10.8(a)#	Offer letter, dated February 10, 2014, between Marrone Bio Innovations, Inc. and James B. Boyd.	10-K	001-36030	10.8	March 25, 2014	
10.8(b)#	Letter Agreement, dated March 3, 2015, between Marrone Bio Innovations, Inc. and James B. Boyd.	10-K	001-36030	10.9	November 10, 2015	
10.8(c)#	Promotion Agreement, dated August 14, 2017, between Marrone Bio Innovations, Inc. and James Boyd.	10-Q	001-36030	10.46	November 14, 2017	
10.9(a)#	Offer letter, dated February 26, 2014, between Marrone Bio Innovations, Inc. and Linda V. Moore.	10-K	001-36030	10.6	November 10, 2015	
10.9(b)#	Letter Agreement, dated March 3, 2015, between Marrone Bio Innovations, Inc. and Linda V. Moore.	10-K	001-36030	10.7	November 10, 2015	
10.11*	License Agreement, dated November 13, 2007, between the U.S. Government, as represented by the U.S. Department of Agriculture, Agricultural Research Service, and Marrone Organic Innovations, Inc.	S-1	333-189753	10.25	July 1, 2013	
10.12*	License Agreement, dated December 28, 2009, between the University of the State of New York and Marrone Bio Innovations, Inc.	S-1/A	333-189753	10.26	July 31, 2013	
10.13	Asset Purchase Agreement, dated May 25, 2012, between Bankruptcy Trustee for Michigan BioDiesel, LLC and Marrone Bio Innovations, Inc.	S-1	333-189753	10.30	July 1, 2013	

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	INCORPORATED BY REFERENCE FORM	FILE NO.	EXHIBIT NUMBER	FILING DATE	FILED HEREWITH
10.14	Business Loan Agreement, dated June 13, 2014, by and between Five Star Bank and jointly and severally Marrone Michigan Manufacturing LLC and Marrone Bio Innovations, Inc.	10-Q	001-36030	10.4	August 13, 2014	
10.15	Invoice Purchase Agreement, made on March 24, 2017 between Marrone Bio Innovations, Inc. and LSQ Funding Group, L.C.	10-Q	001-36030	10.44	May 15, 2017	
10.16	Subordination Agreement, dated as of March 28, 2017 by and among Five Star Bank, Marrone Bio Innovations, Inc., and LSQ Funding Group L.C.	10-Q	001-36030	10.45	May 15, 2017	
10.17	Intercreditor Agreement, dated as of March 22, 2017, between Ivy Investment Management Company, administrative agent for the Waddell Lenders (defined therein), Gordon Snyder, administrative agent for Snyder Lenders (defined therein) and LSQ Funding Group, L.C.	10-Q	001-36030	10.43	May 15, 2017	
10.18(a)	Loan Agreement, dated October 2, 2012, by and among Marrone Bio Innovations, Inc., the Investors party thereto and Gordon Snyder, as agent, including form of promissory note and warrant.	S-1	333-189753	10.17	July 1, 2013	

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	INCORPORATED BY REFERENCE FORM	FILE NO.	EXHIBIT NUMBER	FILING DATE	FILED HEREWITH
10.18(b)	Amendment and Consent, dated April 10, 2013, by and among Marrone Bio Innovations, Inc. and the administrative agent party thereto.	S-1	333-189753	10.23	July 1, 2013	
10.18(c)	Omnibus Amendment to Loan Agreement, dated as of August 19, 2015, by and between Marrone Bio Innovations, Inc. and Gordon Snyder, as agent.	8-K	001-36030	10.2	August 25, 2015	
10.18(d)	Third Amendment to Loan Agreement, dated as of November 11, 2016, by and between Marrone Bio Innovations, Inc. and Gordon Snyder, as agent.	10-K	001-36030	10.42	April 3, 2017	
10.18(e)	Fourth Amendment to Loan Agreement, dated as of October 12, 2017, by and between Marrone Bio Innovations, Inc. and Gordon Snyder, as agent.					X
10.18(f)	Fifth Amendment to Loan Agreement, dated as of October 23, 2017, by and between Marrone Bio Innovations, Inc. and Gordon Snyder, as agent.					X
10.18(g)	Sixth Amendment to Loan Agreement, dated as of December 15, 2017, by and between Marrone Bio Innovations, Inc. and Gordon Snyder, as agent.	8-K	001-36030	10.3	December 18, 2017	
10.19	Security Agreement, dated October 2, 2012, by and among Marrone Bio Innovations, Inc. and the administrative and collateral agent.	S-1	333-189753	10.18	July 1, 2013	

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	INCORPORATED BY REFERENCE FORM	FILE NO.	EXHIBIT NUMBER	FILING DATE	FILED HEREWITH
10.20(a)	Omnibus Amendment No. 1 to Notes, dated as of May 31, 2016, by and among Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy Funds VIP Science & Technology and Marrone Bio Innovations, Inc.	8-K	001-36030	10.01	June 2, 2016	
10.20(b)	Omnibus Amendment No. 2, dated as of October 6, 2017, by and among Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund Ivy Funds VIP Science & Technology and Marrone Bio Innovations, Inc.					X
10.20(c)	Omnibus Amendment No. 3, dated as of October 23, 2017, by and among Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund, Ivy Funds VIP Science & Technology and Marrone Bio Innovations, Inc.					X
10.20(d)	Omnibus Amendment No. 4 to Notes, dated December 15, 2017, by and among Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund, Ivy VIP Science & Technology, Marrone Bio Innovations, Inc. and Ospraie Management LLC.	8-K	001-36030	10.2	December 18, 2017	
10.21	Security Agreement, dated as of August 20, 2015, by and among Marrone Bio Innovations, Inc. and the counterparties thereto.	8-K	001-36030	10.1	August 25, 2015	

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	INCORPORATED BY REFERENCE FORM	FILE NO.	EXHIBIT NUMBER	FILING DATE	FILED HEREWITH
10.22(a)	Promissory Note, dated October 12, 2017, by and between Marrone Bio Innovations, Inc. and Dwight W. Anderson.					X
10.22(b)	Amended and Restated Promissory Note, dated October 23 2017, by and between Marrone Bio Innovations, Inc. and Dwight W. Anderson.					X
10.22(c)	Secured Promissory Note, dated December 22, 2017 between Marrone Bio Innovations, Inc. and Dwight W. Anderson.	8-K	001-36030	10.1	December 29, 2017	
10.23	Security Agreement, dated as of December 22, 2017 between Marrone Bio Innovations, Inc. and Dwight W. Anderson.	8-K	001-36030	10.1	December 29, 2017	
10.24	Securities Purchase Agreement, dated December 15, 2017, by and among Marrone Bio Innovations, Inc. and the investors listed on the Schedule of Buyers attached therein.	8-K	001-36030	10.1	December 18, 2017	
10.25	Registration Rights Agreement, dated as of December 15, 2018, by and among Marrone Bio Innovations, Inc., and the Investors (defined therein).	8-K	001-36030	10.1	December 18, 2017	
10.26	Voting and Lock-Up Agreement, dated February 5, 2018, by and among the Ospraie Group, the Ardsley Group, the Waddell Group, Pamela G. Marrone and Marrone Bio Innovations, Inc.	8-K	001-36030	10.1	February 6, 2018	
10.27(a)	At the Market Offering Agreement, dated December 9, 2016, by and between the Company and H.C. Wainwright & Co., LLC	S-3	333-215024	1.1	December 9, 2016	
10.27(b)	Amendment to At the Market Offering Agreement, dated December 27, 2016, by and between the Company and H.C. Wainwright & Co., LLC	S-3/A	333-215024	1.2	December 29, 2016	
10.28#	Change in Control Agreement, dated as of June 17, 2016, by and between Marrone Bio Innovations, Inc. and Pamela G. Marrone.	10-K	001-36030	10.35	April 3, 2017	
10.29#	Change in Control Agreement, dated as of June 17, 2016, by and between Marrone Bio Innovations, Inc. and James B. Boyd.	10-K	001-36030	10.36	April 3, 2017	
10.30#	Change in Control Agreement, dated as of June 17, 2016, by and between Marrone Bio Innovations, Inc. and Linda V Moore.	10-K	001-36030	10.37	April 3, 2017	
14.1	Code of Business Conduct and Ethics	8-K	001-36030	14.1	August 8, 2017	

EXHIBIT NUMBER	EXHIBIT DESCRIPTION	INCORPORATED BY REFERENCE FORM	FILE NO.	EXHIBIT NUMBER	FILING DATE	FILED HEREWITH
21 .1	List of Subsidiaries of Marrone Bio Innovations, Inc.	10-K	001-36030	10.36	April 3, 2017	
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm.					X
24.1	Power of Attorney (included on signature page).					X
31.1	Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.					X
31.2	Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.					X
32.1	Certification of Principal Executive Officer and Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350					X
101	Interactive Data Files Pursuant to Rule 405 of Regulation S-T: (i) Consolidated Balance Sheets as of December 31, 2017 and 2015; (ii) Consolidated Statements of Operations for the years ended December 31, 2017, 2015 and 2014; (iii) Consolidated Statements of Comprehensive Loss for the years ended December 31, 2017, 2015 and 2014; (iv) Consolidated Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit) for the years ended December 31, 2017, 2015 and 2014; (v) Consolidated Statements of Cash Flows for the years ended December 31, 2017, 2015 and 2014 and (vi) Notes to Consolidated Financial Statements					X

# Indicates a management contract or compensatory plan or arrangement.
† Confidential portions of this document have been redacted and filed separately with the Securities and Exchange Commission.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this Annual Report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Davis, State of California, on April 4, 2018.

MARRONE BIO INNOVATIONS, INC.

/s/ PAMELA G. MARRONE

Pamela G. Marrone
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Pamela G. Marrone her or his true and lawful attorney-in-fact and agent, with full power of substitution and, for her or him and in her or his name, place and stead, in any and all capacities to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as she or he might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

SIGNATURE	TITLE	DATE
/s/ Pamela G. Marrone Pamela G. Marrone	President and Chief Executive Officer (Principal Executive Officer)	April 4, 2018
/s/ James B. Boyd James B. Boyd	Chief Financial Officer and Senior Vice President (Principal Financial Officer and Principal Accounting Officer)	April 4, 2018
/s/ Robert A. Woods Robert A. Woods	Chair of the Board	April 4, 2018
/s/ George Kerckhove George Kerckhove	Director	April 4, 2018
/s/ Yogesh Mago Yogesh Mago	Director	April 4, 2018
/s/ Richard Rominger Richard Rominger	Director	April 4, 2018
/s/ Zachary Wochok Zachary Wochok	Director	April 4, 2018

EXHIBIT A

Form of Warrant

THIS WARRANT AND THE SHARES OF STOCK WHICH MAY BE PURCHASED UPON THE EXERCISE OF THIS WARRANT HAVE BEEN ACQUIRED SOLELY FOR INVESTMENT AND HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "ACT"), OR ANY STATE SECURITIES LAWS. SUCH SECURITIES MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF SUCH REGISTRATION OR AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO THE COMPANY AND ITS COUNSEL THAT SUCH SALE, OFFER, PLEDGE OR HYPOTHECATION IS EXEMPT FROM THE REGISTRATION AND PROSPECTUS DELIVERY REQUIREMENTS OF THE ACT AND OF ANY APPLICABLE STATE SECURITIES LAWS UNLESS SOLD PURSUANT TO RULE 144 OF THE ACT.

Void after November 11, 2026

MARRONE BIO INNOVATIONS, INC.
STOCK PURCHASE WARRANT

WARRANT TO PURCHASE SHARES OF STOCK

THIS CERTIFIES THAT, for value received, [__________] (the "Holder"), subject to and effective upon Holder's agreement and acknowledgement of the provisions and upon the terms and conditions hereinafter set forth below, is entitled to subscribe for and purchase [___] shares of the fully paid and nonassessable shares of the Common Stock (the "Shares") of Marrone Bio Innovations, Inc., a Delaware corporation (the "Company") at a price of $2.38 per share (the "Exercise Price") (as may be adjusted pursuant to Section 3 hereof). This Warrant is one of a series of warrants issued by the Company pursuant to that certain Third Amendment to Loan Agreement (the "Amendment"), dated as of November 11, 2016, by and between the Company and Gordon Snyder, an individual, as administrative agent for the Lenders (as defined in the Amendment) (in such capacity, the "Agent").

1. Method of Exercise; Payment.

(a) Cash Exercise. The purchase rights represented by this Warrant may be exercised by the Holder, in whole or in part, by the surrender of this Warrant (with the notice of exercise form attached hereto as Exhibit A duly executed) at the principal office of the Company, and by the payment to the Company, by certified, cashier's or other check acceptable to the Company, of an amount equal to the aggregate Exercise Price of the Shares being purchased.

(b) Net Issue Exercise. In lieu of exercising this Warrant, the Holder shall have the right to convert this Warrant (or any portion thereof) by surrender of this Warrant at the principal office of the Company together with notice of such conversion on the form attached hereto as Exhibit A, in which event the Company shall issue to the Holder a number of Shares computed using the following formula:

$$X = \frac{Y(A-B)}{A}$$

Where X = the number of the Shares to be issued to the Holder.

Y = the number of the Shares purchasable under this Warrant in respect of which the net issue exercise election is made pursuant to this Section 1(b).

A = the fair market value of one share of the Shares.

B = the Exercise Price on the date of conversion (as adjusted to the date of such conversion).

(c) Fair Market Value. For the purposes of Section 1(b)(ii), "fair market value" per share of Common Stock shall mean (A) if the Common Stock is publicly traded, the average of the closing sales prices, as quoted on the primary national or regional stock exchange on which the Common Stock is listed, or, if not listed, the OTC Bulletin Board if quoted thereon, on the twenty (20) Trading Days immediately preceding the date on which the Notice of Exercise is deemed to have been sent to the Company, (B) if the Common Stock is not publicly traded as set forth in clause (A) of this sentence, as reasonably and in good faith determined by the Board of Directors of the Company as of the date which the Notice of Exercise is deemed to have been sent to the Company, or (C) if this Warrant is exercised as part of the consummation of an Acquisition as provided in Section 9, the per share fair market value of the Shares shall be the value of one share of Common Stock sold or valued in the Acquisition.

(d) Stock Certificates. In the event of any exercise of the rights represented by this Warrant, certificates for the Shares so purchased shall be delivered to the Holder within a reasonable time. Notwithstanding any delay in the delivery of the certificates for the Shares, the Company agrees that Shares purchased under this Warrant shall be and are deemed to be issued to the Holder hereof as the record owner of such Shares as of the close of business on the date on which this Warrant shall be been surrendered, the completed exercise form and the payment of the purchase price has been delivered (or, in the alternative the conversion notice specified in Section 1(b) has been delivered) to the Company.

2. Stock Fully Paid; Reservation of Stock. All of the Shares issuable upon the exercise of the rights represented by this Warrant will, upon issuance and receipt of the Exercise Price therefor, be fully paid and nonassessable, and free from all taxes, liens and charges with respect to the issue thereof.

3. Adjustments. The number and kind of securities purchasable upon the exercise of this Warrant and the Exercise Price therefor shall be subject to adjustment from time to time upon the occurrence of certain events, as follows:

(a) Reclassification. In case of any reclassification or change of the Common Stock (other than a change in par value, or as a result of a subdivision or combination), the Company shall execute a new Warrant, providing that the holder of this Warrant shall have the right to exercise such new Warrant, and procure upon such exercise and payment of the same aggregate Exercise Price, in lieu of the shares of the Common Stock theretofore issuable upon exercise of this Warrant, the kind and amount of shares of stock, other securities, money and property receivable upon such reclassification or change, by a holder of an equivalent number of shares of Common Stock. Such new Warrant shall provide for adjustments which shall be as nearly equivalent as may be practicable to the adjustments provided for in this Section 3. The provisions of this subsection (a) shall similarly apply to successive reclassifications or changes.

(b) Stock Splits, Dividends and Combinations. In the event that the Company shall at any time subdivide the outstanding shares of Common Stock or shall issue a stock dividend on its outstanding shares of Common Stock the number of shares issuable upon exercise of this Warrant immediately prior to such subdivision or to the issuance of such stock dividend shall be proportionately increased, and the Exercise Price shall be proportionately decreased, and in the event that the Company shall at any time combine the outstanding shares of Common Stock the number of shares issuable upon exercise of this Warrant immediately prior to such combination shall be proportionately decreased, and the Exercise Price shall be proportionately increased, effective at the close of business on the date of such subdivision, stock dividend or combination, as the case may be.

4. Notice of Adjustments. Whenever the number of shares purchasable hereunder or the Exercise Price thereof shall be adjusted pursuant to Section 3 hereof, the Company shall promptly provide notice to the Holder setting forth, in reasonable detail, the event requiring the adjustment, the amount of the adjustment, the method by which such adjustment was calculated, and the number and class of shares which may be purchased and the Exercise Price therefor after giving effect to such adjustment.

5. Fractional Shares. This Warrant may not be exercised for fractional shares. In lieu of fractional shares the Company shall make a cash payment therefor based upon the Exercise Price then in effect.

6. Representations of the Company. The Company represents and warrants to the Holder as follows:

(a) That all corporate actions on the part of the Company, its officers, directors and shareholders necessary for the sale and issuance of this Warrant and the performance of the Company's obligations hereunder have been taken. The execution, delivery and performance by the Company of the Warrant does not and will not, to the best of the Company's knowledge, (i) contravene the terms of the Company's certificate of incorporation and bylaws; (ii) result in a breach of or constitute a default under any material lease, instrument, contract or other agreement to which the Company is a party or by which it or its properties may be bound or affected, except where such breach or default could not reasonably be expected to have a Material Adverse Effect; or (iii) violate any provision of any law, rule, regulation, order, judgment, decree or the like binding on or affecting the Company, except where such violation could not reasonably be expected to have a Material Adverse Effect. The Warrant, when executed and delivered pursuant to the Amendment, will constitute the legal, valid and binding obligation of the Company, enforceable against the Company in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium, or similar debtor relief laws from time to time in effect which affect the enforcement of creditors' rights in general and the availability of equitable remedies. For the purposes of this Section 6(a), "Material Adverse Effect" means any change, occurrence, event, circumstance or development that has had or could reasonably be expected to have a material adverse effect on (i) the business, properties, assets, liabilities, financial condition, operation or performance of the Company; or (ii) the validity or enforceability of the Warrantor the rights and remedies of the Agent or the Holder hereunder.

(b) No statement made by the Company (i) in those sections of the Company's Annual Report on Form 10-K for the period ended December 31, 2015, as filed with the Securities and Exchange Commission (the "SEC") on March 30, 2016, entitled "Special Note Regarding Forward-Looking Statements and Trade Names," "Business," "Risk Factors," "Legal Proceedings," "Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities," "Selected Financial Data," and "Management's Discussion and Analysis of Financial Condition and Results of Operations," (ii) in those sections of the Company's Quarterly Reports on Form 10-Q for the periods ended March 31 and June 30, 2016, as filed with the SEC on May 16 and August 15, 2016, respectively, entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations," "Legal Proceedings" and "Risk Factors," and (iii) in those sections of the Company's Proxy Statement on Schedule 14A as filed with the SEC on April 25, 2016, entitled "Information Regarding Our Nominees and Directors," "Executive Officers," "Beneficial Ownership of Our Common Stock," and "Transactions with Related Persons" (together, the "Information Package") contains any untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading.

7. Representations and Warranties by the Holder. The Holder represents and warrants to the Company as follows:

(a) This Warrant and the Shares issuable upon exercise thereof are being acquired for its own account, for investment and not with a view to, or for resale in connection with, any distribution or public offering thereof within the meaning of the Securities Act of 1933, as amended (the "Act"). Upon exercise of this Warrant, the Holder shall, if so requested by the Company, confirm in writing, in a form satisfactory to the Company, that the securities issuable upon exercise of this Warrant are being acquired for investment and not with a view toward distribution or resale.

(b) The Holder understands that the Warrant and the Shares have not been registered under the Act by reason of their issuance in a transaction exempt from the registration and prospectus delivery requirements of the Act pursuant to Section 4(a)(2) thereof, and that they must be held by the Holder indefinitely, and that the Holder must therefore bear the economic risk of such investment indefinitely, unless a subsequent disposition thereof is registered under the Act or is exempted from such registration. The Holder further understands that the Shares have not been qualified under any state securities law by reason of their issuance in a transaction exempt from the qualification requirements thereof, which exemption depends upon, among other things, the bona fide nature of the Holder's investment intent expressed above.

(c) The Holder has such knowledge and experience in financial and business matters that it is capable of evaluating the merits and risks of the purchase of this Warrant and the Shares purchasable pursuant to the terms of this Warrant and of protecting its interests in connection therewith.

(d) The Holder is experienced in evaluating and investing in companies with similar financial concerns as those of the Company and understands the high risk nature of the Holder's investment. The Holder is able to bear the economic risk of the purchase of the Shares pursuant to the terms of this Warrant.

(e) The Holder acknowledges that it has a pre-existing relationship with the Company and that the Holder has received all the information it considers necessary or appropriate for deciding whether to accept the Warrant pursuant to the Amendment, including the Information Package.

(f) The Holder is not relying on any representation or advice from the Company (or any of its officer directors representatives or advisors) or any other person or entity regarding the terms, effect, or tax consequences of this Warrant (other than the representations and warranties set forth in Section 6 of this Warrant).

(g) The Holder represents that it has consulted with its own tax, investment and legal advisors with respect to the federal, state, local and foreign tax consequences arising from its acceptance of the Warrant to the extent Holder has determined it necessary to protect its own interest in connection with the execution of the Amendment and the issuance of the Warrant in view of Holder's prior financial experience and present financial condition, and will rely on its own analysis and investigation and that of Holder's advisors in determining whether to exercise the Warrant. Holder further acknowledges that Holder (and not the Company) shall be responsible for any personal tax liability that may arise as a result of the issuance or exercise of the Warrant.

(h) The Holder acknowledges that the representations, warranties, covenants and acknowledgements set forth in this Section 7 constitute a material inducement to the Company entering into the Amendment and issuing this Warrant.

8. Restrictive Legend.

The Shares (unless registered under the Act) shall be stamped or imprinted with a legend in substantially the following form:

THE SHARES REPRESENTED BY THIS CERTIFICATE HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OR DISTRIBUTION THEREOF, AND HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED. SUCH SHARES MAY NOT BE SOLD OR TRANSFERRED IN THE ABSENCE OF SUCH REGISTRATION OR UNLESS THE COMPANY RECEIVES AN OPINION OF COUNSEL REASONABLY ACCEPTABLE TO IT STATING THAT SUCH SALE OR TRANSFER IS EXEMPT FROM THE REGISTRATION AND PROSPECTUS DELIVERY REQUIREMENTS OF THE ACT. COPIES OF THE AGREEMENT COVERING THE PURCHASE OF THESE SHARES AND RESTRICTING THEIR TRANSFER MAY BE OBTAINED AT NO COST BY WRITTEN REQUEST MADE BY THE HOLDER OF RECORD OF THIS CERTIFICATE TO THE SECRETARY OF THE COMPANY AT THE PRINCIPAL EXECUTIVE OFFICES OF THE COMPANY.

9. Acquisition. If, at any time while this Warrant is outstanding, (i) the Company, directly or indirectly, in one or more related transactions effects any merger or consolidation of the company with or into another individual, limited liability company, partnership, joint venture, corporation, trust, unincorporated organization, any other entity, or a government or any department or agency thereof (but excluding a migratory merger effected solely for the purpose of changing the jurisdiction of incorporation of the Company), (ii) the Company, indirectly or indirectly, effects any sale, assignment, transfer or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company of another person) is completed pursuant to which holders of Common Stock are permitted to sell, tender, or exchange their shared for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock or (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (each an "Acquisition"), then, the Company shall cause this Warrant to be redeemed in connection with such Acquisition (which shall include an express provision in the definitive agreement related to such Acquisition to obligate the parties to effectuate the redemption or similar repurchase or "cash out" of the Warrant as contemplated in this Section 9 for the same consideration that would have been payable in respect of all the Warrant Shares that would have been issuable to the Holder if this Warrant had been fully exercised pursuant to Section 1(b) on the date of, and immediately prior to, the Acquisition; for the avoidance of doubt, the Holder shall be entitled to be paid at least the same per share consideration as the other holders of the Company's Common Stock in connection with any such Acquisition.

10. Rights of Shareholders. No holder of this Warrant shall be entitled, as a Warrant holder, to vote or receive dividends or be deemed the holder of the Shares or any other securities of the Company which may at any time be issuable on the exercise hereof for any purpose, nor shall anything contained herein be construed to confer upon the holder of this Warrant, as such, any of the rights of a stockholder of the Company or any right to vote for the election of directors or upon any matter submitted to shareholders at any meeting thereof, or to give or withhold consent to any corporate action (whether upon any recapitalization, issuance of stock, reclassification of stock, change of par value, consolidation, merger, conveyance, or otherwise) or, except as provided in Section 11 below, to receive notice of meetings, or to receive dividends or subscription rights or otherwise until the Warrant shall have been exercised and the Shares purchasable upon the exercise hereof shall have become deliverable, as provided herein.

11. Notices of Record Date. In the event:

(a) the Company shall declare any dividend or distribution upon any of its capital stock;

(b) there shall be any capital reorganization, reclassification of the capital stock of the Company or an Acquisition; or

(c) there shall be a voluntary or involuntary dissolution, liquidation or winding up of the Company;

the Company shall give to the Holder of this Warrant written notice of any relevant record, payment, effective and exchange dates and the amount and nature of any dividend, distribution or right. Such notice shall be given at least 10 days prior to any record date for distribution or voting and also at least 10 days prior to the effective date of the transactions referred to in (b) and (c) above. Failure to so give notice or any defect in any certification or notice given under this Warrant shall not affect the validity or legality of any transaction giving rise thereto so long as such failure or defect does not result in the termination of Holder's rights under this Warrant.

12. Expiration of Warrant. This Warrant shall expire and shall no longer be exercisable upon the earlier to occur of (a) November 11, 2026 or (b) an Acquisition, provided that the Company has complied with section 9 in all material respects.

13. Notices. All notices and other communications required or permitted hereunder shall be in writing, shall be effective when given, and shall in any event be deemed to be given upon receipt or, if earlier, (a) five (5) days after deposit with the U.S. Postal Service or other applicable postal service, if delivered by first class mail, postage prepaid, (b) upon delivery, if delivered by hand, (c) one business day after the business day of deposit with Federal Express or similar overnight courier, freight prepaid or (d) one business day after the business day of facsimile transmission, if delivered by facsimile transmission with copy by first class mail, postage prepaid, and shall be addressed (i) if to the Holder, at Holder's address set forth on the signature page hereto, and (ii) if to the Company, at the address of its principal corporate offices (attention: President), or at such other address as a party may designate by advance written notice to the other party pursuant to the provisions above.

14. Governing Law. This Warrant and all actions arising out of or in connection with this Warrant shall be governed by and construed in accordance with the internal laws of the State of California, without regard to the conflicts of law provisions thereof.

15. Exchange and Transfer of Warrants.

(a) On surrender for exchange of this Warrant, properly endorsed, the Company at its expense, but on payment by the Holder of any applicable transfer taxes, shall issue and deliver to or on the order of the Holder a new Warrant or Warrants of like tenor, for the same aggregate number of Shares as called for by the Warrant surrendered.

(b) This Warrant may not be transferred at any time without both (x) the consent of the Company in its sole discretion, and (y) either (i) registration under the Act or (ii) an exemption from such registration and a written opinion of legal counsel addressed to the Company that the proposed transfer of the Warrant may be effected without registration under the Act, which opinion will be in form and from counsel reasonably satisfactory to the Company.

(c) Notwithstanding any provision to the contrary in this Section 15, the Holder may transfer, without consideration, this Warrant or any of the Warrant Shares (or any portion thereof) to the Holder's Affiliates (as such term is defined under Rule 144 of the Act) without obtaining the consent of the Company or the opinion from counsel that may be required by Section 15(b)(ii) provided that the Holder delivers to the Company and its counsel certification, documentation, and other assurances reasonably required by the Company's counsel to enable the Company's counsel to render an opinion to the Company's Transfer Agent that such transfer does not violate applicable securities laws.

16. Replacement of Warrants. In the case of the loss, theft or destruction of a Warrant then held by Holder or his assigns, an affidavit of an officer of such Holder stating the loss, theft or destruction, as the case may be, shall constitute evidence satisfactory to the Company and no indemnity or security shall be required for replacement other than the Holder's written agreement to indemnify the Company.

17. No Impairment. The Company shall not, by amendment of its Certificate of Incorporation or bylaws, or through reorganization, consolidation, merger, dissolution, issue or sale of securities, sale of assets or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but shall at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the Holder of this Warrant against impairment.

18. Severability. If any term, provision, covenant or restriction of this Warrant is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions of this Warrant shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

[Signature page follows]

Issued as of November 11, 2016.

MARRONE BIO INNOVATIONS, INC.

By: ______________________________

Name: ______________________________

Title: ______________________________

Agreed and acknowledged:

[ ]

By: ______________________________

Name: ______________________________

Title: ______________________________

Address:

EXHIBIT A

NOTICE OF EXERCISE

TO: Marrone Bio Innovations, Inc.
1540 Drew Ave
Davis, CA 95618
Attention: President

1. The undersigned hereby elects to purchase shares of Marrone Bio Innovations, Inc. pursuant to the terms of the attached Warrant.

2. Method of Exercise (Please initial the applicable blank):

_____ The undersigned elects to exercise the attached Warrant by means of a cash payment, and tenders herewith payment in full for the purchase price of the Shares being purchased, together with all applicable transfer taxes, if any.

_____ The undersigned elects to exercise the attached Warrant by means of the net exercise provisions of Section 1(b) of the Warrant.

3. Please issue a certificate or certificates representing said Shares in the name of the undersigned or in such other name as is specified below:

____
(Name)

____

____
(Address)

4. The undersigned hereby represents and warrants that the aforesaid Shares are being acquired for the account of the undersigned for investment and not with a view to, or for resale, in connection with the distribution thereof, and that the undersigned has no present intention of distributing or reselling such shares and all representations and warranties of the undersigned set forth in Section 7 of the attached Warrant are true and correct as of the date hereof.

____
(Signature)

Title: ______________________________

____
(Date)

FOURTH AMENDMENT TO LOAN AGREEMENT

THIS FOURTH AMENDMENT TO LOAN AGREEMENT (the "Amendment") is made and entered into as of October 12, 2017, by and among Marrone Bio Innovations, Inc., a Delaware corporation (the "Company"), and Gordon Snyder, an individual, as administrative agent for the Lenders (as defined below) (the "Agent").

WHEREAS, the Company, the Agent and certain of the Lenders (as defined therein) are parties to that certain Loan Agreement dated as of October 2, 2012 (as amended by that certain (i) Amendment and Consent dated as of April 10, 2013, (ii) Omnibus Amendment to Loan Agreement dated as of August 19, 2015 and (iii) Third Amendment to Loan Agreement dated as of November 11, 2016, the "Deal A Loan Agreement"), related Security Agreements (as defined in the Deal A Loan Agreement) and other agreements and documents (collectively, including the Deal A Loan Agreement and the Security Agreements, the "Deal A Loan Documents");

WHEREAS, the parties to the Deal A Loan Documents wish to amend the same in order to change certain terms as set forth below;

WHEREAS, the Lenders have agreed that the Company may incur new unsecured debt with a third party lender in an aggregate original principal amount equal to $2,500,000; and

WHEREAS, the Company and the Agent have the full right, power and authority to amend the terms of the Deal A Loan Documents and, respectively, to bind the Company and the Lenders thereto.

NOW, THEREFORE, in consideration of these premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree:

1. Definitions

Capitalized terms used herein without definition shall have the meanings ascribed to them in the Deal A Loan Documents.

2. Amendments to Deal A Loan Agreement

a. Section 1.01 of the Deal A Loan Agreement is hereby amended as follows:

   i. The following definition shall be added in the appropriate alphabetical order:

   "Note Financing October 2017" means the financing pursuant to that certain Promissory Note, dated on or about October 12, 2017, executed by the Company in favor of [Ospraie], the Note Documents (as defined in such Promissory Note), and all other obligations incurred thereunder, and any similar term in any amendment, restatement, modification, replacement, refinancing, refunding, renewal or extension thereof."

b. Section 5.03(a) of the Deal A Loan Agreement is hereby amended by deleting the period at the end of clause (xix) thereof and replacing it with an "; and", and adding the following as clause (xx) thereof:
"(xx) Indebtedness owed to lenders pursuant to the Note Financing October 2017."

3. Fees and Disbursements of Counsel

The Company agrees to pay on demand the reasonable fees and disbursements of one special counsel for the Lenders in connection with the negotiation, preparation, execution, and delivery of the Amendment and related documents in an amount not to exceed $10,000; provided that Agent shall promptly provide the Company with a detailed invoice of such fees and disbursements of counsel upon request thereof.

4. General

The term "Agreement" as used in the Deal A Loan Agreement shall for all purposes refer to the Deal A Loan Agreement as amended by this Amendment. Except to the extent expressly revised by the terms of this Amendment, all the terms and conditions of the Deal A Loan Documents remain in full force and effect. From and after the date of this Amendment, upon the request of the Agent or the Company, the Company and the Agent (on behalf of the Lenders) shall execute and deliver such instruments, documents or other writings as may be reasonably necessary or desirable to confirm and carry out and to effectuate fully the intent and purposes of this Amendment. This Amendment shall be governed by and construed under the laws of the State of California without reference to the choice of law provisions thereof. This Amendment may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Amendment may be executed and delivered by facsimile and upon such delivery the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other parties. This Amendment shall be deemed a Loan Document under the Deal A Loan Agreement.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the parties hereto have executed this Fourth Amendment to Loan Agreement as of the date set forth in the first paragraph hereof.

COMPANY:	**AGENT:**
MARRONE BIO INNOVATIONS, INC., a Delaware corporation	**GORDON SNYDER**
By: */s/ Pam Marrone* Pam Marrone Chief Executive Officer	*/s/ Gordon Snyder*

FIFTH AMENDMENT TO LOAN AGREEMENT

THIS FIFTH AMENDMENT TO LOAN AGREEMENT (the "Amendment") is made and entered into as of October 23, 2017, by and among Marrone Bio Innovations, Inc., a Delaware corporation (the "Company"), and Gordon Snyder, an individual, as administrative agent for the Lenders (as defined below) (the "Agent").

WHEREAS, the Company, the Agent and certain of the Lenders (as defined therein) are parties to that certain Loan Agreement dated as of October 2, 2012 (as amended by that certain (i) Amendment and Consent dated as of April 10, 2013, (ii) Omnibus Amendment to Loan Agreement dated as of August 19, 2015, (iii) Third Amendment to Loan Agreement dated as of November 11, 2016 and (iv) (iii) Fourth Amendment to Loan Agreement dated as of October 12, 2017, the "Deal A Loan Agreement"), related Security Agreements (as defined in the Deal A Loan Agreement) and other agreements and documents (collectively, including the Deal A Loan Agreement and the Security Agreements, the "Deal A Loan Documents");

WHEREAS, the parties to the Deal A Loan Documents wish to amend the same in order to change certain terms as set forth below;

WHEREAS, the Lenders have agreed that the Company may incur pursuant to the amendment and restatement of the Company's unsecured debt with Ospraie Management, LLC in an aggregate principal amount equal to $6,000,000; and

WHEREAS, the Company and the Agent have the full right, power and authority to amend the terms of the Deal A Loan Documents and, respectively, to bind the Company and the Lenders thereto.

NOW, THEREFORE, in consideration of these premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree:

1. Definitions

Capitalized terms used herein without definition shall have the meanings ascribed to them in the Deal A Loan Documents.

2. Amendments to Deal A Loan Agreement

a. Section 1.01 of the Deal A Loan Agreement is hereby amended as follows:

i. The following definition shall be added in the appropriate alphabetical order:

"Amended and Restated Note Financing October 2017" means the financing pursuant to that certain Amended and Restated Promissory Note, dated on or about October 23, 2017, executed by the Company in favor of Ospraie Management, LLC, the Note Documents (as defined in such Promissory Note), and all other obligations incurred thereunder, and any similar term in any amendment, restatement, modification, replacement, refinancing, refunding, renewal or extension thereof, which amends and restates the Note Financing October 2017 (without novation)."

b. Clause (xx) of Section 5.03(a) of the Deal A Loan Agreement is hereby amended and restated in its entirety as follows:

"(xx) Indebtedness owed to lenders pursuant to the Amended and Restated Note Financing October 2017."

3. Fees and Disbursements of Counsel

The Company agrees to pay on demand the reasonable fees and disbursements of one special counsel for the Lenders in connection with the negotiation, preparation, execution, and delivery of the Amendment and related documents in an amount not to exceed $10,000; provided that Agent shall promptly provide the Company with a detailed invoice of such fees and disbursements of counsel upon request thereof.

4. General

The term "Agreement" as used in the Deal A Loan Agreement shall for all purposes refer to the Deal A Loan Agreement as amended by this Amendment. Except to the extent expressly revised by the terms of this Amendment, all the terms and conditions of the Deal A Loan Documents remain in full force and effect. From and after the date of this Amendment, upon the request of the Agent or the Company, the Company and the Agent (on behalf of the Lenders) shall execute and deliver such instruments, documents or other writings as may be reasonably necessary or desirable to confirm and carry out and to effectuate fully the intent and purposes of this Amendment. This Amendment shall be governed by and construed under the laws of the State of California without reference to the choice of law provisions thereof. This Amendment may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. This Amendment may be executed and delivered by facsimile and upon such delivery the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other parties. This Amendment shall be deemed a Loan Document under the Deal A Loan Agreement.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the parties hereto have executed this Fifth Amendment to Loan Agreement as of the date set forth in the first paragraph hereof.

COMPANY:

MARRONE BIO INNOVATIONS, INC.,
a Delaware corporation

By: */s/ Pam Marrone*
Pam Marrone
Chief Executive Officer

AGENT:

GORDON SNYDER

/s/ Gordon Snyder

OMNIBUS AMENDMENT NO. 2 TO NOTES

This Omnibus Amendment No. 2, dated as of October 6, 2017 (this "***Amendment***"), is made by and among Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy VIP Science & Technology (each, a "***Lender***" and together, the "***Lenders***"), and Marrone Bio Innovations, Inc. (the "***Borrower***"), with respect to those certain senior secured promissory notes, dated August 20, 2015 (each as amended, modified, renewed, extended or amended, restated, or replaced from time to time, a "***Note***", and collectively, the "***Notes***") which Borrower has issued to the Lenders.

The parties hereto understand and agree that the definition of "Permitted Indebtedness" in Annex I (*Definitions*) of each Note is hereby amended by adding the following after clause (xviii): "(xix) Indebtedness of the Borrower owing to Ospraie Management, LLC (and its successors and assigns) in an original principal amount of $2,000,000 (together with interest, fees, costs and other amounts) incurred pursuant to the terms of the Promissory Note, dated on or about the date hereof, executed by the Borrower in favor of Ospraie Management, LLC, the Note Documents (as defined in such Promissory Note), and all other obligations incurred thereunder, and any similar term in any amendment, restatement, modification, replacement, refinancing, refunding, renewal or extension thereof."

* * *

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed as of the date first above written.

LENDER:

IVY SCIENCE & TECHNOLOGY FUND
By: Ivy Investment Management Company, its Manager

By: */s/ Zachary H. Shafran*
Name: Zachary H. Shafran
Title: SVP

WADDELL & REED ADVISORS SCIENCE & TECHNOLOGY FUND
By: Waddell & Reed Investment Management Company, its Manager

By: */s/ Zachary H. Shafran*
Name: Zachary H. Shafran
Title: SVP

IVY VIP SCIENCE & TECHNOLOGY
By: Ivy Investment Management Company, its Manager

By: */s/ Zachary H. Shafran*
Name: Zachary H. Shafran
Title: SVP

BORROWER:

MARRONE BIO INNOVATIONS, INC.

By: */s/ James B. Boyd*
Name: James B. Boyd
Title: President and Chief Financial Officer

Exhibit 10.20(c)

OMNIBUS AMENDMENT NO. 3 TO NOTES

This Omnibus Amendment No. 3, dated as of October 23, 2017 (this "***Amendment***"), is made by and among Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy VIP Science & Technology (each, a "***Lender***" and together, the "***Lenders***"), and Marrone Bio Innovations, Inc. (the "***Borrower***"), with respect to those certain senior secured promissory notes, dated August 20, 2015 (each as amended, modified, renewed, extended or amended, restated, or replaced from time to time, a "***Note***", and collectively, the "***Notes***") which Borrower has issued to the Lenders.

The parties hereto understand and agree that the clause (xix) of the definition of "Permitted Indebtedness" in Annex I (*Definitions*) of each Note is hereby amended and restated in its entirety as follows: "(xix) Indebtedness of the Borrower owing to Ospraie Management, LLC (and its successors and assigns) from time to time under the Amended and Restated Promissory Note, originally issued on October 12, 2017 and amended and restated on or about the date hereof, and all other obligations incurred thereunder, and any similar term in any amendment, restatement, modification, replacement, refinancing, refunding, renewal or extension thereof."

* * *

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed as of the date first above written.

LENDER:

IVY SCIENCE & TECHNOLOGY FUND
By: Ivy Investment Management Company, its Manager

By: */s/ Zachary H. Shafran*
Name: Zachary H. Shafran
Title: SVP

WADDELL & REED ADVISORS SCIENCE & TECHNOLOGY FUND
By: Waddell & Reed Investment Management Company, its Manager

By: */s/ Zachary H. Shafran*
Name: Zachary H. Shafran
Title: SVP

IVY VIP SCIENCE & TECHNOLOGY
By: Ivy Investment Management Company, its Manager

By: */s/ Zachary H. Shafran*
Name: Zachary H. Shafran
Title: SVP

BORROWER:

MARRONE BIO INNOVATIONS, INC.

By: */s/ James B. Boyd*
Name: James B. Boyd
Title: President and Chief Financial Officer

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AND HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OR DISTRIBUTION THEREOF. NO SUCH TRANSFER MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR AN OPINION OF COUNSEL IN A FORM SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE SECURITIES ACT OF 1933.

PROMISSORY NOTE

October 12, 2017

FOR VALUE RECEIVED, the undersigned, MARRONE BIO INNOVATIONS, INC., a Delaware corporation (the "***Issuer***"), hereby promises to pay to DWIGHT W. ANDERSON (the "***Lender***"), on the Maturity Date, the principal sum of ONE MILLION UNITED STATES DOLLARS ($1,000,000) or so much thereof as shall have been advanced by the Lender to the Issuer as principal of the Loan under this Promissory Note (as hereafter amended, restated, replaced, supplemented or otherwise modified, this "***Note***") and shall remain outstanding. This Note evidences, among other things, the obligation of the Issuer to repay the Loan made hereunder on the date hereof by the Lender to the Issuer. Capitalized terms used hereinafter and not otherwise defined have the meanings set forth in Section VI.

I. THE LOAN.

1. Subject to the terms and conditions set forth in this Note, the Lender shall make a loan (the "***Loan***") to the Issuer on the date hereof in the amount of One Million United States Dollars ($1,000,000).

II. INTEREST.

1. The principal amount outstanding under the Loan advanced under this Note will bear interest as follows:

(a) commencing on, and including from the date of the issuance of the Loan through December 31, 2017, at a fixed per annum rate equal to 1% *per annum*, which interest shall accrue on the outstanding principal amount of the Loan and be payable in arrears on the Maturity Date unless converted into shares of Issuer's common stock ("***Common Stock***"), in either case in the manner specified in Section V; and

(b) thereafter, at a fixed per annum rate equal to 10% *per annum*, which interest shall accrue on the outstanding principal amount of the Loan and be payable in arrears on the Maturity Date unless converted into shares Common Stock, in either case in the manner specified in Section V.

2. Interest on the Loan advanced under this Note shall be computed on the basis of the actual number of days elapsed over a year of 360 days. In computing such interest, the date the Loan hereunder is issued shall be included and the date of payment thereof shall be excluded.

III. MATURITY DATE.

The unpaid principal amount of the Loan outstanding under this Note plus all accrued and unpaid interest thereon and all other amounts owed hereunder with respect thereto will be paid in full in cash on the third anniversary of the date hereof (the "***Maturity Date***"), in accordance with the terms of this Note.

IV. CONDITIONS.

1. This Note shall become effective on the first date on which each of the Issuer and the Lender shall have executed and delivered to the other party a counterpart of this Note.

2. The Lender shall not be obligated to make the Loan until each of the following conditions shall have been satisfied or waived, in each case in the reasonable discretion of the Lender:

(a) Both before and immediately after giving effect to the making of the Loan by the Lender, the following statements shall be true and correct:

(1) the representations and warranties of the Issuer set forth in this Note shall be true and correct in all material respects (other than such representations and warranties which by their terms are already qualified by materiality, in which case, such representations and warranties shall be true and correct in all respects) with the same effect as if made on the date of issuance of the Loan Request (except to the extent such representations and warranties by their explicit terms relate to a specific earlier date, in which case such representations and warranties shall be so true and correct as of such earlier date); and

(2) no Event of Default shall have then occurred and be continuing or would result immediately after giving effect to the making of the Loan by the Lender.

V. PAYMENTS.

1 . Manner and Time of Payment. Except for any payment in the form of Common Stock, all payments by the Issuer under this Note and the other Note Documents of principal, interest and all other amounts owed hereunder shall be made in same day funds and delivered to the Lender not later than 4:00 p.m. (New York time) on the date such payment is due, with such payment to be made by wire transfer of immediately available funds to the account designated by the Lender to the Issuer in writing at least five (5) Business Days before the applicable payment date; *provided that* funds received by the Lender after 4:00 p.m. (New York time) shall be deemed to have been paid by the Issuer on the next succeeding Business Day. Whenever any payment to be made hereunder shall be stated to be due on a day which is not a Business Day, the payment shall be made on the next succeeding Business Day and such additional period shall be included in the computation of the payment of interest hereunder.

2 . Usury. Under no circumstances will the rate of interest chargeable under this Note be in excess of the maximum amount permitted by applicable New York law. If excess interest is charged and paid in error, then the excess amount will be promptly refunded.

3 . Optional Prepayments. The Issuer may at any time and from time to time prepay the Loan, in whole or in part, together with accrued interest to such date on the amount prepaid, without premium or penalty, upon notice delivered to the Lender, *provided that* that such notice may be contingent on the occurrence of a refinancing or the consummation of a sale, transfer, lease or other disposition of assets and may be revoked or the termination date deferred if the refinancing or sale, transfer, lease or other disposition of assets does not occur.

4 . Optional Conversion. Any or all of the principal or accrued interest under this Note may be converted into shares of Common Stock (the "***Common Conversion Shares***"), at a rate of one (1) share of Common Stock per $1.00 of converting principal or interest, rounded down to the nearest share with any fractional amounts cancelled, at the election of the Lender by delivery of written notice thereof to the Company. The Issuer shall issue Conversion Shares as of the date of receipt of the foregoing notice, and cause to such Conversion Shares promptly to be registered with the Issuer's transfer agent (the "***Transfer Agent***") as a book entry position for the number of such Conversion Shares, in the name of the Lender.

5 . Conversion on Financing. If the Issuer consummates a Qualified Financing prior to the occurrence of the Maturity Date, the aggregate outstanding principal balance of this Note and all accrued and unpaid interest thereon may, at the election of the Lender by delivery of written notice thereof to the Company, effective as of the date the Company receives the foregoing notice (the ***"Conversion Date***"), convert in whole without any further action by the Issuer or the Lender, and without the payment of additional consideration by the Lender and in lieu of any cash repayment obligation by the Issuer, into that number of the Financing Securities issued and sold in such Qualified Financing determined by dividing (a) the aggregate outstanding principal balance of this Note as of such Conversion Date, together with all accrued and unpaid interest thereon through the Conversion Date, by (b) the Conversion Price. Any conversion notice delivered pursuant to this Section V.5 must be received by the Company within five (5) Business Days of the Company providing notice to the Lender of the Qualified Financing. In connection with any conversion of this Note pursuant to this Section V.5, the Lender will become a party to any purchase agreement, investor rights agreement, voting agreement and any other similar agreement entered into by the other investors in the Qualified Financing.

6 . Limitations. Notwithstanding the foregoing Sections V.4 and V.5, unless the Issuer has received approval from stockholders or waiver of applicable limitations under the rules of The Nasdaq Capital Market, the Issuer shall not effect any issuance of Conversion Shares, and the Lender shall not have the right to receive any Common Conversion Shares or Financing Securities under this Note, (a) until the listing of the Common Conversion Shares or Financing Securities, as applicable, with The Nasdaq Capital Market, which the Issuer undertakes to complete as soon as practicable, and (b) to the extent that (i) after giving effect to such issuance, the Lender (together with the Lender's affiliates, and any other person acting as a group together with the Lender or any of the Lender's affiliates) would beneficially own any Common Stock in excess of 19.99% of the number of shares of the Common Stock outstanding immediately after giving effect to such issuance or (ii) such issuance would cause the Issuer to have issued a number of shares of Common Stock or securities convertible or exercisable for shares of Common Stock in excess of 19.9% of the number of outstanding shares of Common Stock on the date of this Note. Any amounts not issuable to the Lender in Securities as a result of this paragraph shall be payable in cash in accordance with Section V.1.

VI. <u>DEFINITIONS</u>.

For all purposes of this Note, the following terms shall have the respective meanings set forth below:

1. "***Business Day***" means a day on which commercial banks are not required or authorized by law to close in New York, New York.

2. "***Conversion Price***" shall mean the purchase price per share or unit paid by the purchasers of the Financing Securities issued and sold in the Qualified Financing.

3. "***Equity Financing***" shall mean any issuance and sale for cash of Common Stock, or any stock or equity security convertible into or exchangeable for Common Stock and any warrant or option to acquire Common Stock or any such convertible or exchangeable security ("***Common Stock Equivalents***"), by the Issuer occurring after the date hereof.

4. "***Financing Securities***" shall mean the identical class or series of Common Stock or Common Stock Equivalents of the Issuer issued and sold in a Qualified Financing.

5. "***Material Adverse Effect***" means a material adverse change in, or material adverse effect upon, the operations, business or financial condition of the Issuer.

6. "***Material Indebtedness***" of the Issuer at any date means indebtedness the outstanding principal amount of which exceeds in the aggregate $5,000,000.

7. "***Note Documents***" means, collectively, (a) this Note and (b) each other related agreement, certificate, document, or instrument executed and delivered by the Issuer in connection with the foregoing, as each such other related agreement, document or instrument may be amended, restated, replaced, supplemented or otherwise modified from time to time in accordance with its terms.

8. "***Person***" means and includes natural persons, corporations, limited partnerships, general partnerships, limited liability companies, limited liability partnerships, joint stock companies, joint ventures, associations, companies, trusts, banks, trust companies, land trusts, business trusts or other organizations, whether or not legal entities, and government authorities.

9. “***Qualified Financing***” shall mean the first Equity Financing (or substantially concurrent Equity Financings), primarily for equity financing purposes, occurring after the date hereof which results in immediately available gross proceeds to the Issuer, excluding proceeds from this Note and any other indebtedness of the Issuer that converts into equity in such financing, of at least $10 million; provided, that, in order for any such Equity Financing to constitute a “Qualified Financing,” at least 50% of the amount invested in such Equity Financing must be made by Persons who are not an affiliate of the Issuer.

10. “***Securities***” shall mean this Note and any Common Conversion Shares or Financing Securities issued pursuant to this Note.

VII. REPRESENTATIONS AND WARRANTIES OF ISSUER.

1 . Organization and Qualification. The Issuer (a) is duly organized, validly existing and in good standing under the laws of the jurisdiction of its organization, (b) has the power and authority to own its property and to transact the business in which it is engaged and proposes to engage, and (c) is duly qualified and in good standing in each jurisdiction where the ownership, leasing or operation of property or the conduct of its business requires such qualification, in each case except where the failure to do so would have a Material Adverse Effect.

2. Authority and Enforceability; No Conflict. The Issuer has the organizational power and authority, and the legal right to issue this Note and to perform all of its obligations hereunder. The issuance of this Note by the Issuer has been duly authorized by all necessary action on the part of the Issuer, and constitutes a valid and binding obligation of the Issuer enforceable against it in accordance with its terms, except as enforceability may be limited by bankruptcy, insolvency, fraudulent conveyance or similar laws affecting creditors’ rights generally and general principles of equity (regardless of whether the application of such principles is considered in a proceeding in equity or at law). This Note and the other Note Documents do not, nor does the performance or observance by the Issuer, if any, of any of the matters and things herein or therein provided for, contravene or constitute a default under (a) any provision of law or any judgment, injunction, order or decree binding upon the Issuer, if any, (b) any provision of the organizational documents of the Issuer, or (c) any material covenant, indenture or agreement of or affecting the Issuer or any of its property, in each case except where such contravention or default, individually or in the aggregate, could not be reasonably be expected to have a Material Adverse Effect.

3. Approvals. No authorization, consent, license or exemption from, or filing or registration with, any governmental authority, nor any approval or consent of any other Person, is or will be necessary to the valid execution, delivery or performance by the Issuer of this Note, except (a) those obtained or made on or prior to the date hereof, (b) such filings as may be required to be made with the United States Securities and Exchange Commission (the “***Commission***”) and any state or foreign blue sky or securities regulatory authority after the issuance of this Note by the Issuer, (c) such filings the absence of which could not reasonably be expected to have a Material Adverse Effect, and (d) listing of the Common Conversion Shares and Financing Securities with The Nasdaq Capital Market.

4 . Valid Issuance of Securities. The Conversion Shares issuable pursuant to this Note, when issued, sold and delivered in accordance with the terms of this Note, will be duly and validly issued, fully paid, and nonassessable.

5. Reports. The Issuer has filed all reports, schedules, forms, statements and other documents required to be filed by it under the Securities Exchange Act of 1934, as amended, including pursuant to Section 13(a) or 15(d) thereof, including Notifications of Late Filing on Form 12b-25, for the year preceding the date hereof (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, being collectively referred to herein as the "***SEC Reports***") on a timely basis. As of their respective filing dates, the SEC Reports complied in all material respects with the requirements of the Securities Act and the Exchange Act and the rules and regulations of the Commission promulgated thereunder, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. The financial statements of the Issuer included in the Issuer's SEC Reports comply in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements have been prepared in accordance with GAAP, as applied on a consistent basis during the periods involved, except as may be otherwise specified in such financial statements or the notes thereto and except that unaudited financial statements may not contain all footnotes required by GAAP, and fairly present in all material respects the financial position of the Issuer and its consolidated Subsidiaries taken as a whole as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal, immaterial year-end audit adjustments.

6 . Indebtedness for Borrowed Money. Schedule I hereto sets forth all of the indebtedness for borrowed money of the Issuer owing to third parties as of the date hereof.

VIII. REPRESENTATIONS AND WARRANTIES OF LENDER.

1. Purchase Entirely for Own Account. This Note is issued to the Lender in reliance upon the Lender's representation to the Issuer, which by the Lender's execution of this Note, the Lender hereby confirms, that the Note has been acquired for investment for the Lender's own account, not as a nominee or agent, and not with a view to the resale or distribution of any part thereof, and that the Lender has no present intention of selling, granting any participation in, or otherwise distributing the same. By executing this Note, the Lender further represents that the Lender does not presently have any contract, undertaking, agreement or arrangement with any person to sell, transfer or grant participations to such person or to any third person, with respect to the Securities. The Lender has not been formed for the specific purpose of acquiring the Securities.

2 . Disclosure of Information. The Lender has had an opportunity to discuss the Issuer's business, management, financial affairs and the terms and conditions of the offering of the Note with the Lender's management and has had an opportunity to review the Issuer's facilities.

3 . Restricted Securities. The Lender understands that the Securities have not been, and may not be, registered under the Securities Act of 1933, as amended (the "***Securities Act***"), by reason of a specific exemption from the registration provisions of the Securities Act which depends upon, among other things, the bona fide nature of the investment intent and the accuracy of the Lender's representations as expressed herein. The Lender understands that the Note is, and the Conversion Shares will be, "restricted securities" under applicable U.S. federal and state securities laws and that, pursuant to these laws, the Lender must hold the Securities indefinitely unless they are registered with the Commission and qualified by state authorities, or an exemption from such registration and qualification requirements is available. The Lender further acknowledges that if an exemption from registration or qualification is available, it may be conditioned on various requirements including, but not limited to, the time and manner of sale, the holding period for the Securities, and on requirements relating to the Issuer which are outside of the Lender's control, and which the Issuer is under no obligation and may not be able to satisfy. The Lender understands that the Securities may bear the legend set forth above this Note or any other legend required by the securities laws of any state to the extent such laws are applicable to the Securities represented by the certificate so legended.

4. Accredited Investor. The Lender is an accredited investor as defined in Rule 501(a) of Regulation D promulgated under the Securities Act.

IX. EVENTS OF DEFAULT; REMEDIES.

If any of the following conditions or events (each, an "***Event of Default***") shall occur:

1. Failure by the Issuer to pay any principal of or interest on the Loan, or any other amount due under this Note or the Note Documents, in each case five (5) Business Days after the date on which such payment is due, whether at stated maturity, by acceleration or otherwise; or

2. Any representation, warranty, certification or other statement made by the Issuer in any Note Document or in any statement or certificate at any time given by the Issuer in writing pursuant hereto or thereto or in connection herewith or therewith shall be false in any material respect on the date as of which made; or

3. The Issuer shall default in the performance of or compliance with any term contained in this Note or any of the other Note Documents, and such failure continues for thirty (30) Business Days after the date on which the Lender gives written notice thereof to the Issuer; or

4. The commencement of any bankruptcy, reorganization, arrangement, adjustment of debt, relief of debtors, dissolution, insolvency, receivership or liquidation or similar proceeding of any jurisdiction relating to the Issuer;

5. The Issuer shall incur Indebtedness for borrowed money owing to third parties in an aggregate principal amount outstanding at any time exceeding $1,000,000, except such indebtedness set forth on Schedule I hereto and any incurrences, advances or borrowings contemplated thereby.

6. The Issuer (a) defaults in making any payment of any principal of any Material Indebtedness on the scheduled or original due date with respect thereto; (b) defaults in making any payment of any interest on any such Material Indebtedness beyond the period of grace, if any, provided in the instrument or agreement under which such Indebtedness was created; or (c) defaults in the observance or performance of any other agreement or condition relating to any such Material Indebtedness or contained in any instrument or agreement evidencing, securing or relating thereto, or any other event shall occur or condition exist, the effect of which default or other event or condition is to cause, or to permit the holder or beneficiary of such Material Indebtedness (or a trustee or agent on behalf of such holder or beneficiary) to cause, with the giving of notice if required, such Material Indebtedness to become due prior to its stated maturity or to become subject to a mandatory prepayment, repurchase, redemption or offer to purchase by the obligor thereunder or to become payable; or

7. At any time after the execution and delivery thereof, (a) any Note Document shall cease to be in full force and effect or shall be declared null and void or (b) the Issuer takes any action for the purpose of terminating, repudiating or rescinding any Note Document executed by it or any of its obligations thereunder:

THEN, (A) upon the occurrence and during the continuation of any Event of Default described in clause (4) above, the unpaid principal amount of and accrued interest on the Loan and all other obligations hereunder shall automatically become immediately due and payable, without presentment, demand, protest or other requirements of any kind, all of which are hereby expressly waived by the Issuer, and any commitment or obligation of the Lender to make the Loan or extend additional credit to the Issuer hereunder shall thereupon terminate; and (B) upon the occurrence and during the continuation of any other Event of Default, the Lender may, by written notice (which may be delivered by facsimile or overnight courier) to the Issuer, declare (i) this Note and any commitment or obligation of the Lender to make the Loan or extend additional credit to the Issuer hereunder to be terminated, and/or (ii) all or any portion of (1) the unpaid principal amount of and accrued interest on the Loan and (2) all other obligations of the Issuer under this Note to be immediately due and payable, without presentment, demand, protest or other requirements of any kind, all of which are hereby expressly waived by the Issuer.

X. <u>MISCELLANEOUS</u>.

1. No delay or omission on the part of the Lender in exercising any right hereunder shall operate as a waiver of such right or of any other rights of the Lender, nor shall any delay, omission or waiver on any one occasion be deemed a bar or waiver of the same or any other right on any further occasion.

2. Except as otherwise expressly provided in this Note, all notices and other communications made or required to be given pursuant to this Note or the other Note Documents shall be in writing and shall be delivered by hand, mailed by United States registered or certified first class mail, postage prepaid, sent by overnight courier, or sent by electronic mail, telecopy, facsimile or telex (with confirmation of receipt thereof), addressed to such party at the notice address beneath its signature hereto or at such other address for notice as such party shall last have furnished in writing to the Person giving the notice.

3. This Note, together with the Note Documents, constitutes the entire agreement of the parties with respect to the subject matter hereof and is intended to supersede all prior negotiations, understandings and agreements with respect thereto.

4. In the event that any provision of this Note is held to be invalid, prohibited or unenforceable in any jurisdiction for any reason, unless such provision is narrowed by judicial construction, this Note shall, as to such jurisdiction, be construed as if such invalid, prohibited or unenforceable provision had been more narrowly drawn so as not to be invalid, prohibited or unenforceable. If, notwithstanding the foregoing, any provision of this Note is held to be invalid, prohibited or unenforceable in any jurisdiction, such provision, as to such jurisdiction, shall be ineffective to the extent of such invalidity, prohibition or unenforceability without invalidating the remaining portion of such provision or the other provisions of this Note and without affecting the validity or enforceability of such provision or the other provisions of this Note in any other jurisdiction.

5. This Note shall be binding upon and inure to the benefit of and be enforceable by the respective successors and assigns of the Lender and the Issuer, *provided that* neither party may assign or transfer any of its obligations hereunder without the prior written consent of the other party.

6. The obligation described in this Note is registered as to both principal and any stated interest with the Issuer (or its agent) and transfer of the obligation may be effected only by surrender of this Note, and either the reissuance by the Issuer of this Note to the new holder or the issuance by the Issuer of a new instrument to the new holder, such that interest payable under the obligation qualifies as portfolio interest within the meaning of Section 871(h) of the Internal Revenue Code of 1986, as amended. The Lender shall provide the Issuer with a properly completed Form W-8BEN (or successor form) prior to the receipt of any interest under this Note and upon the Issuer's reasonable request.

7. Neither this Note nor any provision hereof may be amended, supplemented, waived or otherwise modified except pursuant to an agreement or agreements in writing entered into by the Issuer and the Lender. No waiver of any provision of this Note or consent to any departure by the Issuer herefrom shall in any event be effective unless the same shall be permitted by the preceding sentence, and then such waiver or consent shall be effective only in the specific instance and for the purpose for which given.

8. The Issuer and every endorser and guarantor of this Note or the obligation represented hereby waive presentment, demand, notice, protest and all other demands and notices in connection with the delivery, acceptance, performance, default or enforcement of this Note, and assent to any extension or postponement of the time of payment or any other indulgence, to any substitution, exchange or release of collateral and to the addition or release of any other party or person primarily or secondarily liable. The Issuer acknowledges it has been advised by counsel of its choice with respect to the effect of the foregoing waivers and this Note, the other Note Documents and the transactions evidenced by this Note and the other Note Documents.

9. This Note may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original, and all of which taken together shall constitute one and the same Note. In the event that any signature is delivered by facsimile transmission, such signature shall create a valid binding obligation of the party executing (or on whose behalf such signature is executed) the same with the same force and effect as if such facsimile signature were the original thereof.

10. **ALL JUDICIAL PROCEEDINGS BROUGHT AGAINST ANY PARTY ARISING OUT OF OR RELATING TO THIS NOTE OR ANY NOTE DOCUMENT, OR ANY OBLIGATIONS HEREUNDER OR THEREUNDER, SHALL BE BROUGHT EXCLUSIVELY IN THE SUPREME COURT OF THE STATE OF NEW YORK SITTING IN NEW YORK COUNTY OR THE UNITED STATES DISTRICT COURT OF THE SOUTHERN DISTRICT OF NEW YORK. BY EXECUTING AND DELIVERING THIS NOTE, EACH PARTY, FOR ITSELF AND IN CONNECTION WITH ITS PROPERTIES, IRREVOCABLY (I) ACCEPTS GENERALLY AND UNCONDITIONALLY THE EXCLUSIVE JURISDICTION AND VENUE OF SUCH COURTS; (II) WAIVES ANY DEFENSE OF FORUM NON CONVENIENS; (III) AGREES THAT SERVICE OF ALL PROCESS IN ANY SUCH PROCEEDING IN ANY SUCH COURT MAY BE MADE BY REGISTERED OR CERTIFIED MAIL, RETURN RECEIPT REQUESTED, TO SUCH PARTY AT ITS ADDRESS PROVIDED IN ACCORDANCE WITH THE TERMS OF THIS NOTE; (IV) AGREES THAT, SERVICE AS PROVIDED IN CLAUSE (III) ABOVE IS SUFFICIENT TO CONFER PERSONAL JURISDICTION OVER SUCH PARTY IN ANY SUCH PROCEEDING IN ANY SUCH COURT, AND OTHERWISE CONSTITUTES EFFECTIVE AND BINDING SERVICE IN EVERY RESPECT; AND (V) AGREES THAT THE PROVISIONS OF THIS PARAGRAPH RELATING TO JURISDICTION AND VENUE SHALL BE BINDING AND ENFORCEABLE TO THE FULLEST EXTENT PERMISSIBLE UNDER NEW YORK GENERAL OBLIGATIONS LAW SECTION 5-1402 OR OTHERWISE.**

11. **EACH OF THE PARTIES TO THIS NOTE HEREBY AGREES TO WAIVE ITS RESPECTIVE RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF THIS NOTE OR ANY OF THE NOTE DOCUMENTS OR ANY DEALINGS BETWEEN THEM RELATING TO THE SUBJECT MATTER OF THIS LOAN TRANSACTION OR THE LENDER/BORROWER RELATIONSHIP THAT IS BEING ESTABLISHED.** The scope of this waiver is intended to be all-encompassing of any and all disputes that may be filed in any court and that relate to the subject matter of this transaction, including contract claims, tort claims, breach of duty claims and all other common law and statutory claims. Each party hereto acknowledges that this waiver is a material inducement to enter into a business relationship that each has already relied on this waiver in entering into this Note, and that each will continue to rely on this waiver in their related future dealings. Each party hereto further warrants and represents that it has reviewed this waiver with its legal counsel and that it knowingly and voluntarily waives its jury trial rights following consultation with legal counsel. **THIS WAIVER IS IRREVOCABLE, MEANING THAT IT MAY NOT BE MODIFIED EITHER ORALLY OR IN WRITING (OTHER THAN BY A MUTUAL WRITTEN WAIVER SPECIFICALLY REFERRING TO THIS PARAGRAPH AND EXECUTED BY EACH OF THE PARTIES HERETO), AND THIS WAIVER SHALL APPLY TO ANY SUBSEQUENT AMENDMENTS, RENEWALS, SUPPLEMENTS OR MODIFICATIONS TO THIS NOTE OR ANY OF THE NOTE DOCUMENTS OR TO ANY OTHER DOCUMENTS OR AGREEMENTS RELATING TO THE LOAN MADE HEREUNDER.** In the event of litigation, this Note may be filed as a written consent to a trial by the court.

12. **THIS NOTE AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES HEREUNDER SHALL FOR ALL PURPOSES BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE INTERNAL LAWS OF THE STATE OF NEW YORK (INCLUDING SECTION 5-1401 OF THE GENERAL OBLIGATIONS LAW OF THE STATE OF NEW YORK), WITHOUT REGARD TO CONFLICTS OF LAWS PRINCIPLES THAT WOULD REQUIRE APPLICATION OF ANOTHER LAW.**

* * * * *

IN WITNESS WHEREOF, each of the undersigned has caused this Note to be duly executed and duly delivered by its duly authorized officer as of the day and year first above written.

MARRONE BIO INNOVATIONS, INC.**,**
as Issuer

By: */s/ James B. Boyd*
Name: James B. Boyd
Title: President and CFO

Notice Address:
1540 Drew Avenue
Davis, CA 95618

Email: jboyd@marronebio.com

SIGNATURE PAGE TO PROMISSORY NOTE

Accepted and agreed:

OSPRAIE MANAGEMENT, LLC,
as Lender

By: */s/ Dwight W. Anderson*
Name: Dwight W. Anderson
Title: Managing Member

Notice Address: 437 Madison Avenue, 28th Floor
New York, NY 10022
Address:
Email: dwighta@ospraie.com

SIGNATURE PAGE TO PROMISSORY NOTE

Schedule I

Indebtedness for Borrowed Money
(The following information is taken from the Issuer's 10-Q filed on August 14, 2017)

1. Indebtedness in connection with that certain Purchase Agreement, dated as of August 20, 2015(as amended, restated, supplemented or otherwise modified from time to time) with Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy VIP Science and Technology (the "***Investors***"), pursuant to which the Issuer sold to such Investors senior secured promissory notes in the aggregate principal amount of $40,000,000.

2. Indebtedness in connection with that certain Loan Agreement dated as of October 2, 2012 (as amended, restated, supplemented or otherwise modified from time to time), with certain lenders from time to time and Gordon Snyder, an individual, as administrative agent for the Lenders, pursuant to which such lenders agreed to purchase senior secured promissory notes inan aggregate principal amount of up to $12,500,000.

3. Indebtedness in connection with that certain Business Loan Agreement, dated as of June 13, 2014 (as amended, restated, supplemented or otherwise modified from time to time), with Marrone Michigan Manufacturing, LLC and Five Star Bank, pursuant to which Five Star Bank advanced loans in the aggregate principal amount of $10,000,000.

4. Indebtedness in connection with that certain Invoice Purchase Agreement, dated as of March 20, 2017 (as amended, restated, supplemented or otherwise modified from time to time), with LSQ Funding Group, L.C., pursuant to which LSQ may elect to purchase up to $7,000,000 of eligible customer invoices from the Issuer.

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AND HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OR DISTRIBUTION THEREOF. NO SUCH TRANSFER MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR AN OPINION OF COUNSEL IN A FORM SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE SECURITIES ACT OF 1933.

AMENDED AND RESTATED PROMISSORY NOTE

Original Issuance Date: October 12, 2017

Amendment and Restatement Effective Date: October 23, 2017

FOR VALUE RECEIVED, the undersigned, MARRONE BIO INNOVATIONS, INC., a Delaware corporation (the "***Issuer***"), hereby promises to pay to DWIGHT W. ANDERSON (the "***Lender***"), on the Maturity Date, the principal sum of SIX MILLION UNITED STATES DOLLARS ($6,000,000) or so much thereof as shall have been advanced by the Lender to the Issuer as principal of the Loans under this Promissory Note (as hereafter amended, restated, replaced, supplemented or otherwise modified, this "***Amended and Restated Note***") and shall remain outstanding. This Amended and Restated Note evidences, among other things, the obligation of the Issuer to repay the Loans made hereunder from time to time by the Lender to the Issuer. Capitalized terms used hereinafter and not otherwise defined have the meanings set forth in Section VI.

I. THE LOAN.

1. Subject to the terms and conditions set forth in this Amended and Restated Note, the Lender shall make loans in an aggregate principal amount not exceeding Six Million United States Dollars ($6,000,000) in the following order (collectively, the "***Loans***", and each, a "***Loan***"): (a) on October 12, 2017, One Million United States Dollars ($1,000,000), which amount the parties hereto acknowledge and agreed were advanced as of such date by the Lender to the Issuer, (b) on the date hereof, One Million United States Dollars ($1,000,000), (c) at the election of the Lender it its sole discretion, on November 3, 2017, Two Million United States Dollars ($2,000,000) and (d) at the election of the Lender in its sole discretion, on December 3, 2017, Two Million United States Dollars ($2,000,000).

II. INTEREST.

1. The principal amount outstanding under the Loans advanced under this Amended and Restated Note will bear interest as follows:

(a) commencing on, and including from the date of the issuance of such Loan through December 31, 2017 (or such later date as the Lender may decide in its reasonable discretion and as notified to the Issuer), at a fixed per annum rate equal to 1% *per annum*, which interest shall accrue on the outstanding principal amount of such Loans and be payable in arrears on the Maturity Date unless converted into shares of Issuer's common stock ("***Common Stock***"), in either case in the manner specified in Section V; and

(b) thereafter, at a fixed per annum rate equal to 10% *per annum*, which interest shall accrue on the outstanding principal amount of such Loans and be payable in arrears on the Maturity Date unless converted into shares Common Stock, in either case in the manner specified in Section V.

2. Interest on the Loans advanced under this Amended and Restated Note shall be computed on the basis of the actual number of days elapsed over a year of 360 days. In computing such interest, the date the Loans hereunder is issued shall be included and the date of payment thereof shall be excluded.

III. MATURITY DATE.

The unpaid principal amount of the Loans outstanding under this Amended and Restated Note plus all accrued and unpaid interest thereon and all other amounts owed hereunder with respect thereto will be paid in full in cash on the third anniversary of the date hereof (the "***Maturity Date***"), in accordance with the terms of this Amended and Restated Note.

IV. CONDITIONS.

1. This Amended and Restated Note shall become effective on the first date on which each of the Issuer and the Lender shall have executed and delivered to the other party a counterpart of this Amended and Restated Note.

2. The Lender shall not be obligated to make any Loans until each of the following conditions shall have been satisfied or waived, in each case in the reasonable discretion of the Lender:

(a) Both before and immediately after giving effect to the making of each Loan by the Lender, the following statements shall be true and correct:

(1) the representations and warranties of the Issuer set forth in this Amended and Restated Note shall be true and correct in all material respects (other than such representations and warranties which by their terms are already qualified by materiality, in which case, such representations and warranties shall be true and correct in all respects) with the same effect as if made on the date of issuance of a loan request (except to the extent such representations and warranties by their explicit terms relate to a specific earlier date, in which case such representations and warranties shall be so true and correct as of such earlier date); and

(2) no Event of Default shall have then occurred and be continuing or would result immediately after giving effect to the making of such Loan by the Lender.

V. **PAYMENTS.**

1. Manner and Time of Payment. Except for any payment in the form of Common Stock, all payments by the Issuer under this Amended and Restated Note and the other Amended and Restated Note Documents of principal, interest and all other amounts owed hereunder shall be made in same day funds and delivered to the Lender not later than 4:00 p.m. (New York time) on the date such payment is due, with such payment to be made by wire transfer of immediately available funds to the account designated by the Lender to the Issuer in writing at least five (5) Business Days before the applicable payment date; *provided that* funds received by the Lender after 4:00 p.m. (New York time) shall be deemed to have been paid by the Issuer on the next succeeding Business Day. Whenever any payment to be made hereunder shall be stated to be due on a day which is not a Business Day, the payment shall be made on the next succeeding Business Day and such additional period shall be included in the computation of the payment of interest hereunder.

2. Usury. Under no circumstances will the rate of interest chargeable under this Amended and Restated Note be in excess of the maximum amount permitted by applicable New York law. If excess interest is charged and paid in error, then the excess amount will be promptly refunded.

3. Optional Prepayments. The Issuer may at any time and from time to time prepay the Loans, in whole or in part, together with accrued interest to such date on the amount prepaid, without premium or penalty, upon notice delivered to the Lender, *provided that* that such notice may be contingent on the occurrence of a refinancing or the consummation of a sale, transfer, lease or other disposition of assets and may be revoked or the termination date deferred if the refinancing or sale, transfer, lease or other disposition of assets does not occur.

4. Optional Conversion. Any or all of the principal or accrued interest under this Amended and Restated Note may be converted into shares of Common Stock (the "***Common Conversion Shares***"), at a rate of one (1) share of Common Stock per $1.00 of converting principal or interest, rounded down to the nearest share with any fractional amounts cancelled, at the election of the Lender by delivery of written notice thereof to the Company. The Issuer shall issue Conversion Shares as of the date of receipt of the foregoing notice, and cause to such Conversion Shares promptly to be registered with the Issuer's transfer agent (the "***Transfer Agent***") as a book entry position for the number of such Conversion Shares, in the name of the Lender.

5. Conversion on Financing. If the Issuer consummates a Qualified Financing prior to the occurrence of the Maturity Date, the aggregate outstanding principal balance of this Amended and Restated Note and all accrued and unpaid interest thereon may, at the election of the Lender by delivery of written notice thereof to the Company, effective as of the date the Company receives the foregoing notice (the "***Conversion Date***"), convert in whole without any further action by the Issuer or the Lender, and without the payment of additional consideration by the Lender and in lieu of any cash repayment obligation by the Issuer, into that number of the Financing Securities issued and sold in such Qualified Financing determined by dividing (a) the aggregate outstanding principal balance of this Amended and Restated Note as of such Conversion Date, together with all accrued and unpaid interest thereon through the Conversion Date, by (b) the Conversion Price. Any conversion notice delivered pursuant to this Section V.5 must be received by the Company within five (5) Business Days of the Company providing notice to the Lender of the Qualified Financing. In connection with any conversion of this Amended and Restated Note pursuant to this Section V.5, the Lender will become a party to any purchase agreement, investor rights agreement, voting agreement and any other similar agreement entered into by the other investors in the Qualified Financing.

6. Limitations. Notwithstanding the foregoing Sections V.4 and V.5, unless the Issuer has received approval from stockholders or waiver of applicable limitations under the rules of The Nasdaq Capital Market, the Issuer shall not effect any issuance of Conversion Shares, and the Lender shall not have the right to receive any Common Conversion Shares or Financing Securities under this Amended and Restated Note, (a) until the listing of the Common Conversion Shares or Financing Securities, as applicable, with The Nasdaq Capital Market, which the Issuer undertakes to complete as soon as practicable, and (b) to the extent that (i) after giving effect to such issuance, the Lender (together with the Lender's affiliates, and any other person acting as a group together with the Lender or any of the Lender's affiliates) would beneficially own any Common Stock in excess of 19.99% of the number of shares of the Common Stock outstanding immediately after giving effect to such issuance or (ii) such issuance would cause the Issuer to have issued a number of shares of Common Stock or securities convertible or exercisable for shares of Common Stock in excess of 19.9% of the number of outstanding shares of Common Stock on the date of this Amended and Restated Note. Any amounts not issuable to the Lender in Securities as a result of this paragraph shall be payable in cash in accordance with Section V.1.

VI. DEFINITIONS.

For all purposes of this Amended and Restated Note, the following terms shall have the respective meanings set forth below:

1. "***Business Day***" means a day on which commercial banks are not required or authorized by law to close in New York, New York.

2. "***Conversion Price***" shall mean the purchase price per share or unit paid by the purchasers of the Financing Securities issued and sold in the Qualified Financing.

3. "***Equity Financing***" shall mean any issuance and sale for cash of Common Stock, or any stock or equity security convertible into or exchangeable for Common Stock and any warrant or option to acquire Common Stock or any such convertible or exchangeable security ("***Common Stock Equivalents***"), by the Issuer occurring after the date hereof.

4. "***Financing Securities***" shall mean the identical class or series of Common Stock or Common Stock Equivalents of the Issuer issued and sold in a Qualified Financing.

5. "***Material Adverse Effect***" means a material adverse change in, or material adverse effect upon, the operations, business or financial condition of the Issuer.

6. "***Material Indebtedness***" of the Issuer at any date means indebtedness the outstanding principal amount of which exceeds in the aggregate $5,000,000.

7. "***Amended and Restated Note Documents***" means, collectively, (a) this Amended and Restated Note and (b) each other related agreement, certificate, document, or instrument executed and delivered by the Issuer in connection with the foregoing, as each such other related agreement, document or instrument may be amended, restated, replaced, supplemented or otherwise modified from time to time in accordance with its terms.

8. "***Person***" means and includes natural persons, corporations, limited partnerships, general partnerships, limited liability companies, limited liability partnerships, joint stock companies, joint ventures, associations, companies, trusts, banks, trust companies, land trusts, business trusts or other organizations, whether or not legal entities, and government authorities.

9. "***Qualified Financing***" shall mean the first Equity Financing (or substantially concurrent Equity Financings), primarily for equity financing purposes, occurring after the date hereof which results in immediately available gross proceeds to the Issuer, excluding proceeds from this Amended and Restated Note and any other indebtedness of the Issuer that converts into equity in such financing, of at least $10 million; provided, that, in order for any such Equity Financing to constitute a "Qualified Financing," at least 50% of the amount invested in such Equity Financing must be made by Persons who are not an affiliate of the Issuer.

10. "***Securities***" shall mean this Amended and Restated Note and any Common Conversion Shares or Financing Securities issued pursuant to this Amended and Restated Note.

VII. REPRESENTATIONS AND WARRANTIES OF ISSUER.

1. Organization and Qualification. The Issuer (a) is duly organized, validly existing and in good standing under the laws of the jurisdiction of its organization, (b) has the power and authority to own its property and to transact the business in which it is engaged and proposes to engage, and (c) is duly qualified and in good standing in each jurisdiction where the ownership, leasing or operation of property or the conduct of its business requires such qualification, in each case except where the failure to do so would have a Material Adverse Effect.

2. Authority and Enforceability; No Conflict. The Issuer has the organizational power and authority, and the legal right to issue this Amended and Restated Note and to perform all of its obligations hereunder. The issuance of this Amended and Restated Note by the Issuer has been duly authorized by all necessary action on the part of the Issuer, and constitutes a valid and binding obligation of the Issuer enforceable against it in accordance with its terms, except as enforceability may be limited by bankruptcy, insolvency, fraudulent conveyance or similar laws affecting creditors' rights generally and general principles of equity (regardless of whether the application of such principles is considered in a proceeding in equity or at law). This Amended and Restated Note and the other Amended and Restated Note Documents do not, nor does the performance or observance by the Issuer, if any, of any of the matters and things herein or therein provided for, contravene or constitute a default under (a) any provision of law or any judgment, injunction, order or decree binding upon the Issuer, if any, (b) any provision of the organizational documents of the Issuer, or (c) any material covenant, indenture or agreement of or affecting the Issuer or any of its property, in each case except where such contravention or default, individually or in the aggregate, could not be reasonably be expected to have a Material Adverse Effect.

3. Approvals. No authorization, consent, license or exemption from, or filing or registration with, any governmental authority, nor any approval or consent of any other Person, is or will be necessary to the valid execution, delivery or performance by the Issuer of this Amended and Restated Note, except (a) those obtained or made on or prior to the date hereof, (b) such filings as may be required to be made with the United States Securities and Exchange Commission (the "***Commission***") and any state or foreign blue sky or securities regulatory authority after the issuance of this Amended and Restated Note by the Issuer, (c) such filings the absence of which could not reasonably be expected to have a Material Adverse Effect, and (d) listing of the Common Conversion Shares and Financing Securities with The Nasdaq Capital Market.

4. Valid Issuance of Securities. The Conversion Shares issuable pursuant to this Amended and Restated Note, when issued, sold and delivered in accordance with the terms of this Amended and Restated Note, will be duly and validly issued, fully paid, and nonassessable.

5. Reports. The Issuer has filed all reports, schedules, forms, statements and other documents required to be filed by it under the Securities Exchange Act of 1934, as amended, including pursuant to Section 13(a) or 15(d) thereof, including Notifications of Late Filing on Form 12b-25, for the year preceding the date hereof (the foregoing materials, including the exhibits thereto and documents incorporated by reference therein, being collectively referred to herein as the "***SEC Reports***") on a timely basis. As of their respective filing dates, the SEC Reports complied in all material respects with the requirements of the Securities Act and the Exchange Act and the rules and regulations of the Commission promulgated thereunder, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. The financial statements of the Issuer included in the Issuer's SEC Reports comply in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements have been prepared in accordance with GAAP, as applied on a consistent basis during the periods involved, except as may be otherwise specified in such financial statements or the Amended and Restated Note s thereto and except that unaudited financial statements may not contain all footnotes required by GAAP, and fairly present in all material respects the financial position of the Issuer and its consolidated Subsidiaries taken as a whole as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal, immaterial year-end audit adjustments.

6. Indebtedness for Borrowed Money. Schedule I hereto sets forth all of the indebtedness for borrowed money of the Issuer owing to third parties as of the date hereof.

VIII. REPRESENTATIONS AND WARRANTIES OF LENDER.

1. Purchase Entirely for Own Account. This Amended and Restated Note is issued to the Lender in reliance upon the Lender's representation to the Issuer, which by the Lender's execution of this Amended and Restated Note, the Lender hereby confirms, that the Amended and Restated Note has been acquired for investment for the Lender's own account, not as a nominee or agent, and not with a view to the resale or distribution of any part thereof, and that the Lender has no present intention of selling, granting any participation in, or otherwise distributing the same. By executing this Amended and Restated Note, the Lender further represents that the Lender does not presently have any contract, undertaking, agreement or arrangement with any person to sell, transfer or grant participations to such person or to any third person, with respect to the Securities. The Lender has not been formed for the specific purpose of acquiring the Securities.

2. Disclosure of Information. The Lender has had an opportunity to discuss the Issuer's business, management, financial affairs and the terms and conditions of the offering of the Amended and Restated Note with the Lender's management and has had an opportunity to review the Issuer's facilities.

3. Restricted Securities. The Lender understands that the Securities have not been, and may not be, registered under the Securities Act of 1933, as amended (the "***Securities Act***"), by reason of a specific exemption from the registration provisions of the Securities Act which depends upon, among other things, the bona fide nature of the investment intent and the accuracy of the Lender's representations as expressed herein. The Lender understands that the Amended and Restated Note is, and the Conversion Shares will be, "restricted securities" under applicable U.S. federal and state securities laws and that, pursuant to these laws, the Lender must hold the Securities indefinitely unless they are registered with the Commission and qualified by state authorities, or an exemption from such registration and qualification requirements is available. The Lender further acknowledges that if an exemption from registration or qualification is available, it may be conditioned on various requirements including, but not limited to, the time and manner of sale, the holding period for the Securities, and on requirements relating to the Issuer which are outside of the Lender's control, and which the Issuer is under no obligation and may not be able to satisfy. The Lender understands that the Securities may bear the legend set forth above this Amended and Restated Note or any other legend required by the securities laws of any state to the extent such laws are applicable to the Securities represented by the certificate so legended.

4. Accredited Investor. The Lender is an accredited investor as defined in Rule 501(a) of Regulation D promulgated under the Securities Act.

IX. EVENTS OF DEFAULT; REMEDIES.

If any of the following conditions or events (each, an "***Event of Default***") shall occur:

1. Failure by the Issuer to pay any principal of or interest on the Loans, or any other amount due under this Amended and Restated Note or the Amended and Restated Note Documents, in each case five (5) Business Days after the date on which such payment is due, whether at stated maturity, by acceleration or otherwise; or

2. Any representation, warranty, certification or other statement made by the Issuer in any Amended and Restated Note Document or in any statement or certificate at any time given by the Issuer in writing pursuant hereto or thereto or in connection herewith or therewith shall be false in any material respect on the date as of which made; or

3. The Issuer shall default in the performance of or compliance with any term contained in this Amended and Restated Note or any of the other Amended and Restated Note Documents, and such failure continues for thirty (30) Business Days after the date on which the Lender gives written notice thereof to the Issuer; or

4. The commencement of any bankruptcy, reorganization, arrangement, adjustment of debt, relief of debtors, dissolution, insolvency, receivership or liquidation or similar proceeding of any jurisdiction relating to the Issuer;

5. The Issuer shall incur Indebtedness for borrowed money owing to third parties in an aggregate principal amount outstanding at any time exceeding $1,000,000, except such indebtedness set forth on Schedule I hereto and any incurrences, advances or borrowings contemplated thereby.

6. The Issuer (a) defaults in making any payment of any principal of any Material Indebtedness on the scheduled or original due date with respect thereto; (b) defaults in making any payment of any interest on any such Material Indebtedness beyond the period of grace, if any, provided in the instrument or agreement under which such Indebtedness was created; or (c) defaults in the observance or performance of any other agreement or condition relating to any such Material Indebtedness or contained in any instrument or agreement evidencing, securing or relating thereto, or any other event shall occur or condition exist, the effect of which default or other event or condition is to cause, or to permit the holder or beneficiary of such Material Indebtedness (or a trustee or agent on behalf of such holder or beneficiary) to cause, with the giving of notice if required, such Material Indebtedness to become due prior to its stated maturity or to become subject to a mandatory prepayment, repurchase, redemption or offer to purchase by the obligor thereunder or to become payable; or

7. At any time after the execution and delivery thereof, (a) any Amended and Restated Note Document shall cease to be in full force and effect or shall be declared null and void or (b) the Issuer takes any action for the purpose of terminating, repudiating or rescinding any Amended and Restated Note Document executed by it or any of its obligations thereunder:

THEN, (A) upon the occurrence and during the continuation of any Event of Default described in clause (4) above, the unpaid principal amount of and accrued interest on the Loans and all other obligations hereunder shall automatically become immediately due and payable, without presentment, demand, protest or other requirements of any kind, all of which are hereby expressly waived by the Issuer, and any commitment or obligation of the Lender to make the Loans or extend additional credit to the Issuer hereunder shall thereupon terminate; and (B) upon the occurrence and during the continuation of any other Event of Default, the Lender may, by written notice (which may be delivered by facsimile or overnight courier) to the Issuer, declare (i) this Amended and Restated Note and any commitment or obligation of the Lender to make the Loans or extend additional credit to the Issuer hereunder to be terminated, and/or (ii) all or any portion of (1) the unpaid principal amount of and accrued interest on the Loans and (2) all other obligations of the Issuer under this Amended and Restated Note to be immediately due and payable, without presentment, demand, protest or other requirements of any kind, all of which are hereby expressly waived by the Issuer.

X. <u>MISCELLANEOUS</u>.

1. No delay or omission on the part of the Lender in exercising any right hereunder shall operate as a waiver of such right or of any other rights of the Lender, nor shall any delay, omission or waiver on any one occasion be deemed a bar or waiver of the same or any other right on any further occasion.

2. Except as otherwise expressly provided in this Amended and Restated Note, all notices and other communications made or required to be given pursuant to this Amended and Restated Note or the other Amended and Restated Note Documents shall be in writing and shall be delivered by hand, mailed by United States registered or certified first class mail, postage prepaid, sent by overnight courier, or sent by electronic mail, telecopy, facsimile or telex (with confirmation of receipt thereof), addressed to such party at the notice address beneath its signature hereto or at such other address for notice as such party shall last have furnished in writing to the Person giving the notice.

3. This Amended and Restated Note, together with the Amended and Restated Note Documents, constitutes the entire agreement of the parties with respect to the subject matter hereof and is intended to supersede all prior negotiations, understandings and agreements with respect thereto.

4. In the event that any provision of this Amended and Restated Note is held to be invalid, prohibited or unenforceable in any jurisdiction for any reason, unless such provision is narrowed by judicial construction, this Amended and Restated Note shall, as to such jurisdiction, be construed as if such invalid, prohibited or unenforceable provision had been more narrowly drawn so as not to be invalid, prohibited or unenforceable. If, notwithstanding the foregoing, any provision of this Amended and Restated Note is held to be invalid, prohibited or unenforceable in any jurisdiction, such provision, as to such jurisdiction, shall be ineffective to the extent of such invalidity, prohibition or unenforceability without invalidating the remaining portion of such provision or the other provisions of this Amended and Restated Note and without affecting the validity or enforceability of such provision or the other provisions of this Amended and Restated Note in any other jurisdiction.

5. This Amended and Restated Note shall be binding upon and inure to the benefit of and be enforceable by the respective successors and assigns of the Lender and the Issuer, *provided that* neither party may assign or transfer any of its obligations hereunder without the prior written consent of the other party.

6. The obligation described in this Amended and Restated Note is registered as to both principal and any stated interest with the Issuer (or its agent) and transfer of the obligation may be effected only by surrender of this Amended and Restated Note, and either the reissuance by the Issuer of this Amended and Restated Note to the new holder or the issuance by the Issuer of a new instrument to the new holder, such that interest payable under the obligation qualifies as portfolio interest within the meaning of Section 871(h) of the Internal Revenue Code of 1986, as amended. The Lender shall provide the Issuer with a properly completed Form W-8BEN (or successor form) prior to the receipt of any interest under this Amended and Restated Note and upon the Issuer's reasonable request.

7. Neither this Amended and Restated Note nor any provision hereof may be amended, supplemented, waived or otherwise modified except pursuant to an agreement or agreements in writing entered into by the Issuer and the Lender. No waiver of any provision of this Amended and Restated Note or consent to any departure by the Issuer herefrom shall in any event be effective unless the same shall be permitted by the preceding sentence, and then such waiver or consent shall be effective only in the specific instance and for the purpose for which given.

8. The Issuer and every endorser and guarantor of this Amended and Restated Note or the obligation represented hereby waive presentment, demand, notice, protest and all other demands and notices in connection with the delivery, acceptance, performance, default or enforcement of this Amended and Restated Note, and assent to any extension or postponement of the time of payment or any other indulgence, to any substitution, exchange or release of collateral and to the addition or release of any other party or person primarily or secondarily liable. The Issuer acknowledges it has been advised by counsel of its choice with respect to the effect of the foregoing waivers and this Amended and Restated Note, the other Amended and Restated Note Documents and the transactions evidenced by this Amended and Restated Note and the other Amended and Restated Note Documents.

9. This Amended and Restated Note may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original, and all of which taken together shall constitute one and the same Amended and Restated Note. In the event that any signature is delivered by facsimile transmission, such signature shall create a valid binding obligation of the party executing (or on whose behalf such signature is executed) the same with the same force and effect as if such facsimile signature were the original thereof.

10. **ALL JUDICIAL PROCEEDINGS BROUGHT AGAINST ANY PARTY ARISING OUT OF OR RELATING TO THIS AMENDED AND RESTATED NOTE OR ANY AMENDED AND RESTATED NOTE DOCUMENT, OR ANY OBLIGATIONS HEREUNDER OR THEREUNDER, SHALL BE BROUGHT EXCLUSIVELY IN THE SUPREME COURT OF THE STATE OF NEW YORK SITTING IN NEW YORK COUNTY OR THE UNITED STATES DISTRICT COURT OF THE SOUTHERN DISTRICT OF NEW YORK. BY EXECUTING AND DELIVERING THIS AMENDED AND RESTATED NOTE, EACH PARTY, FOR ITSELF AND IN CONNECTION WITH ITS PROPERTIES, IRREVOCABLY (I) ACCEPTS GENERALLY AND UNCONDITIONALLY THE EXCLUSIVE JURISDICTION AND VENUE OF SUCH COURTS; (II) WAIVES ANY DEFENSE OF FORUM NON CONVENIENS; (III) AGREES THAT SERVICE OF ALL PROCESS IN ANY SUCH PROCEEDING IN ANY SUCH COURT MAY BE MADE BY REGISTERED OR CERTIFIED MAIL, RETURN RECEIPT REQUESTED, TO SUCH PARTY AT ITS ADDRESS PROVIDED IN ACCORDANCE WITH THE TERMS OF THIS AMENDED AND RESTATED NOTE; (IV) AGREES THAT, SERVICE AS PROVIDED IN CLAUSE (III) ABOVE IS SUFFICIENT TO CONFER PERSONAL JURISDICTION OVER SUCH PARTY IN ANY SUCH PROCEEDING IN ANY SUCH COURT, AND OTHERWISE CONSTITUTES EFFECTIVE AND BINDING SERVICE IN EVERY RESPECT; AND (V) AGREES THAT THE PROVISIONS OF THIS PARAGRAPH RELATING TO JURISDICTION AND VENUE SHALL BE BINDING AND ENFORCEABLE TO THE FULLEST EXTENT PERMISSIBLE UNDER NEW YORK GENERAL OBLIGATIONS LAW SECTION 5-1402 OR OTHERWISE.**

11. **EACH OF THE PARTIES TO THIS AMENDED AND RESTATED NOTE HEREBY AGREES TO WAIVE ITS RESPECTIVE RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF THIS AMENDED AND RESTATED NOTE OR ANY OF THE AMENDED AND RESTATED NOTE DOCUMENTS OR ANY DEALINGS BETWEEN THEM RELATING TO THE SUBJECT MATTER OF THIS LOAN TRANSACTION OR THE LENDER/BORROWER RELATIONSHIP THAT IS BEING ESTABLISHED.** The scope of this waiver is intended to be all-encompassing of any and all disputes that may be filed in any court and that relate to the subject matter of this transaction, including contract claims, tort claims, breach of duty claims and all other common law and statutory claims. Each party hereto acknowledges that this waiver is a material inducement to enter into a business relationship that each has already relied on this waiver in entering into this Amended and Restated Note, and that each will continue to rely on this waiver in their related future dealings. Each party hereto further warrants and represents that it has reviewed this waiver with its legal counsel and that it knowingly and voluntarily waives its jury trial rights following consultation with legal counsel. **THIS WAIVER IS IRREVOCABLE, MEANING THAT IT MAY NOT BE MODIFIED EITHER ORALLY OR IN WRITING (OTHER THAN BY A MUTUAL WRITTEN WAIVER SPECIFICALLY REFERRING TO THIS PARAGRAPH AND EXECUTED BY EACH OF THE PARTIES HERETO), AND THIS WAIVER SHALL APPLY TO ANY SUBSEQUENT AMENDMENTS, RENEWALS, SUPPLEMENTS OR MODIFICATIONS TO THIS AMENDED AND RESTATED NOTE OR ANY OF THE AMENDED AND RESTATED NOTE DOCUMENTS OR TO ANY OTHER DOCUMENTS OR AGREEMENTS RELATING TO THE LOANS MADE HEREUNDER.** In the event of litigation, this Amended and Restated Note may be filed as a written consent to a trial by the court.

12. **THIS AMENDED AND RESTATED NOTE AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES HEREUNDER SHALL FOR ALL PURPOSES BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE INTERNAL LAWS OF THE STATE OF NEW YORK (INCLUDING SECTION 5-1401 OF THE GENERAL OBLIGATIONS LAW OF THE STATE OF NEW YORK), WITHOUT REGARD TO CONFLICTS OF LAWS PRINCIPLES THAT WOULD REQUIRE APPLICATION OF ANOTHER LAW.**

13. This Amended and Restated Note is given in replacement of that certain Promissory Note, dated as of October 12, 2017, in the amount of $1,000,000 (the "***Prior Note***") issued by the Issuer to the Lender. This Amended and Restated Note is not intended to be, and shall not be construed to be, a novation of any of the obligations owing under or in connection with the Prior Note, and any Loans outstanding under the Prior Note will be deemed Loans in accordance with the Agreement and this Amended and Restated Note.

* * * * *

IN WITNESS WHEREOF, each of the undersigned has caused this Amended and Restated Note to be duly executed and duly delivered by its duly authorized officer as of the day and year first above written.

MARRONE BIO INNOVATIONS, INC.,
as Issuer

By: */s/ James B. Boyd*
Name: James B. Boyd
Title: President and CFO

Notice Address:
1540 Drew Avenue
Davis, CA 95618

Email: jboyd@marronebio.com

SIGNATURE PAGE TO PROMISSORY NOTE

Accepted and agreed:

DWIGHT W. ANDERSON,
as Lender

By: */s/ Dwight W. Anderson*

Notice Address:	437 Madison Avenue, 28th Floor New York, NY 10022
Address: Email:	 dwighta@ospraie.com

SIGNATURE PAGE TO PROMISSORY NOTE

Schedule I

Indebtedness for Borrowed Money

1. Indebtedness in connection with that certain Purchase Agreement, dated as of August 20, 2015(as amended, restated, supplemented or otherwise modified from time to time) with Ivy Science & Technology Fund, Waddell & Reed Advisors Science & Technology Fund and Ivy VIP Science and Technology (the "***Investors***"), pursuant to which the Issuer sold to such Investors senior secured promissory notes in the aggregate principal amount of $40,000,000.

2. Indebtedness in connection with that certain Loan Agreement dated as of October 2, 2012 (as amended, restated, supplemented or otherwise modified from time to time), with certain lenders from time to time and Gordon Snyder, an individual, as administrative agent for the Lenders, pursuant to which such lenders agreed to purchase senior secured promissory notes in an aggregate principal amount of up to $12,500,000.

3. Indebtedness in connection with that certain Business Loan Agreement, dated as of June 13, 2014 (as amended, restated, supplemented or otherwise modified from time to time), with Marrone Michigan Manufacturing, LLC and Five Star Bank, pursuant to which Five Star Bank advanced loans in the aggregate principal amount of $10,000,000.

4. Indebtedness in connection with that certain Invoice Purchase Agreement, dated as of March 20, 2017 (as amended, restated, supplemented or otherwise modified from time to time), with LSQ Funding Group, L.C., pursuant to which LSQ may elect to purchase up to $7,000,000 of eligible customer invoices from the Issuer.

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

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

(1) Registration Statement (Form S-3 No. 333-215024) of Marrone Bio Innovations, Inc.;

(2) Registration Statements (Form S-8 No. 333-191048) pertaining to the Marrone Bio Innovations, Inc. 2013 Stock Incentive Plan, the Marrone Bio Innovations, Inc. 2011 Stock Plan, and the Marrone Bio Innovations, Inc. Stock Option Plan, as amended; and

(3) Registration Statements (Forms S-8 Nos. 333-219981 and 333-222846) pertaining to the Marrone Bio Innovations, Inc. 2013 Stock Incentive Plan, as amended.

of our report dated April 4, 2018, with respect to the consolidated financial statements of Marrone Bio Innovations, Inc. included in this Annual Report (Form 10-K) for the year ended December 31, 2017.

/s/ Ernst & Young LLP

Roseville, California
April 4, 2018

Exhibit 31.1

I, Pamela G. Marrone, certify that:

1. I have reviewed this Annual Report on Form 10-K of Marrone Bio Innovations, 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)) 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: April 4, 2018

/s/ Pamela G. Marrone

Pamela G. Marrone
Chief Executive Officer

Exhibit 31.2

I, James B. Boyd, certify that:

1. I have reviewed this Annual Report on Form 10-K of Marrone Bio Innovations, 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)) 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: April 4, 2018

/s/ James B. Boyd

James B. Boyd
President and Chief Financial Officer

Exhibit 32.1

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER AND CHIEF FINANCIAL OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Pamela G. Marrone, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Marrone Bio Innovations, Inc. on Form 10-K for the fiscal year ended December 31, 2017 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Marrone Bio Innovations, Inc.

Date: April 4, 2018

By:	*/s/ Pamela G. Marrone*
Name:	Pamela G. Marrone
Title:	Chief Executive Officer

I, James B. Boyd, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Marrone Bio Innovations, Inc. on Form 10-K for the fiscal year ended December 31, 2017 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of Marrone Bio Innovations, Inc.

Date: April 4, 2018

By:	*/s/ James B. Boyd*
Name:	James B. Boyd
Title:	President and Chief Financial Officer

This certification accompanies this Report on Form 10-K pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 and shall not be deemed filed by the Company for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the Exchange Act). Such certification will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent that the Company specifically incorporates it by reference.