UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 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 001-37566

SYNLOGIC, INC.

(Exact name of Registrant as specified in its Charter)

Delaware	**26-1824804**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
301 Binney St., Suite 402 Cambridge, MA	**02142**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (617) 401-9975

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

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock, par value $0.001 per share	**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 ☒

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§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 ☒ NO ☐

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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 small reporting company)	Small reporting company	☒
Emerging growth company	☒		

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

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

The aggregate market value of common stock held by non-affiliates of the registrant as of June 30, 2017, the last business day of the registrant's most recently completed second quarter, was $23.8 million, computed based on the closing price of $11.69 per share on June 30, 2017.

As of March 15, 2018 there were 22,172,117 shares of the registrant's common stock, par value $0.001 per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The following documents (or parts thereof) are incorporated by reference into the following parts of this Form 10-K: Certain information required in Part III of this Annual Report on Form 10-K is incorporated from the registrant's definitive proxy statement for the 2018 annual meeting of stockholders to be filed pursuant to Regulation 14A with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2017.

Table of Contents

PART I

Item 1. Business.

Overview

We are a clinical-stage biopharmaceutical company focused on advancing our drug discovery and development platform for Synthetic Biotic™ medicines, which are designed using synthetic biology to genetically reprogram beneficial microbes to treat metabolic and inflammatory diseases and cancer. Synthetic Biotic medicines are generated from our proprietary drug discovery and development platform applying the principles and tools of synthetic biology to engineer beneficial probiotic bacteria to perform or deliver critical therapeutic functions. As living medicines, Synthetic Biotic medicines can be designed to sense a local disease context within a patient's body and to respond by metabolizing a toxic substance, compensating for missing or damaged metabolic pathways in patients, or by delivering combinations of therapeutic factors. Our goal is to lead in the discovery and development of Synthetic Biotic therapies as living medicines capable of robust and precise pathway complementation and delivery of therapeutic benefit.

Our initial focus is on metabolic diseases with the potential to be corrected following oral delivery of a living medicine to the gut. This includes a group of rare genetic diseases called inborn errors of metabolism (IEMs), as well as acquired metabolic diseases caused by organ dysfunction. When delivered orally, Synthetic Biotic medicines are designed to act from the gut to compensate for the dysfunctional metabolic pathway with the intended consequence of reducing the systemic levels of the toxic metabolites. We believe that success in IEMs will enable us to demonstrate the potential of our oral Synthetic Biotic medicines to address metabolic dysfunction while bringing meaningful change to the lives of patients suffering from these debilitating conditions.

Our two lead therapeutic programs are being developed for the treatment of hyperammonemia and phenylketonuria (PKU). SYNB1020, our first therapeutic program, is an oral therapy intended for the treatment of patients with liver disease and hepatic encephalopathy (HE) and in patients with urea cycle disorders (UCD). In these conditions ammonia accumulates in the body and becomes toxic leading to neurocognitive crisis and risk of long-term cognitive or behavioral impairment, coma or death. SYNB1020 has received both Fast Track Designation and orphan drug designation for UCD from the U.S. Food and Drug Administration (FDA). We initiated a Phase 1 clinical trial in June 2017 to evaluate the safety and tolerability of SYNB1020 in healthy volunteers. In November 2017, we announced top-line data from this study that demonstrated that SYNB1020 was safe and well-tolerated and achieved proof-of-mechanism. In March 2018, we initiated a clinical trial in patients with cirrhosis and elevated blood ammonia to evaluate the safety and tolerability of SYNB1020 as well as the ability of this Synthetic Biotic medicine to lower systemic levels of ammonia. We also intend to initiate a clinical trial of SYNB1020 in UCD patients. Timing of initiation of this study will be informed by a number of factors including data from our Phase 1b / 2a study in patients with cirrhosis.

SYNB1618, our second program, is an oral therapy intended for the treatment of PKU, an IEM in which the amino acid phenylalanine (Phe) accumulates in the body as a result of genetic defects. Elevated levels of Phe are toxic to the brain and can lead to neurological dysfunction. SYNB1618 is designed to function in the gut of patients to reduce excess circulating Phe, resulting in normalization of levels in the blood and tissues. In October 2017, the FDA granted SYNB1618 orphan drug designation for PKU. We are planning to initiate a Phase 1 / 2a clinical trial for SYNB1618 in the first half of 2018.

Our early-stage metabolic pipeline includes discovery-stage product candidates for additional IEMs, including maple syrup urine disease (MSUD), isovaleric acidemia (IVA) and organic acidemias. These are rare metabolic deficiencies in which the toxic accumulation of metabolites such as branched chain amino acids in the case of MSUD can lead to neurological decline and death. There are no currently approved pharmaceutical therapies for these disorders, resulting in patients relying on liver transplants when possible. In 2018 we intend to select a Synthetic Biotic clinical candidate in our MSUD program and advance it into preclinical studies to enable filing of an Investigational New Drug application (IND) with the FDA in 2019.

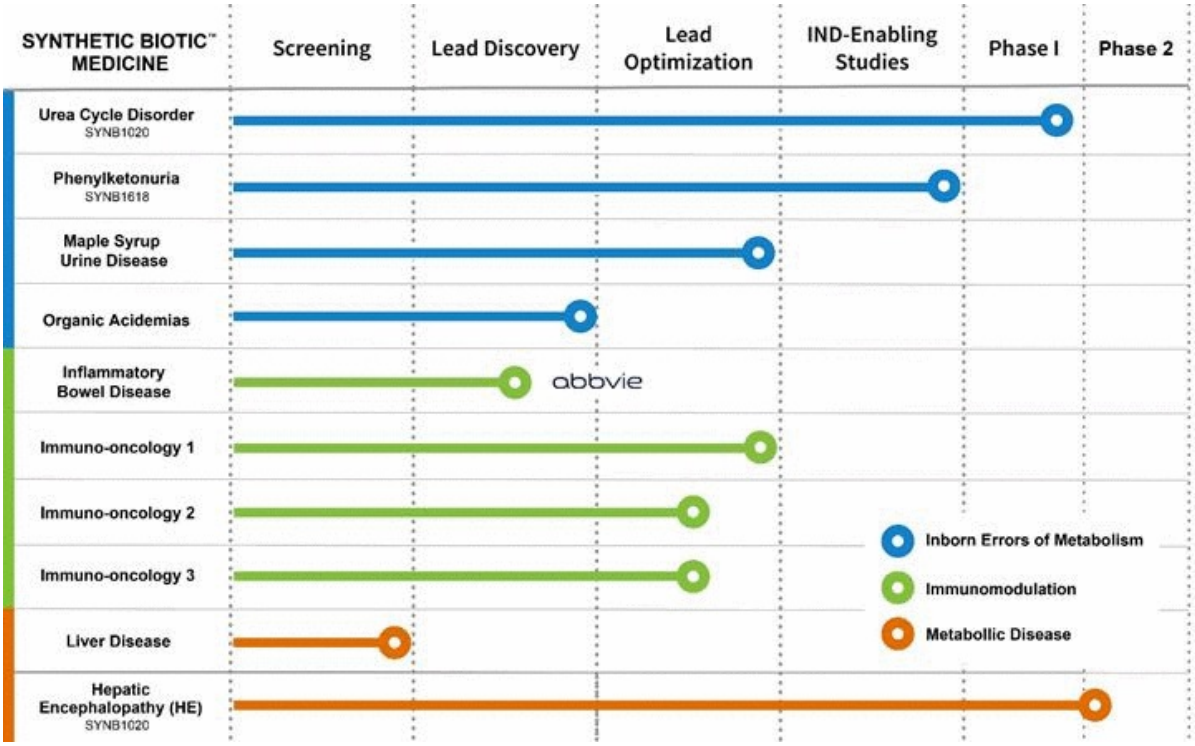
We are also leveraging our proprietary technology platform to develop Synthetic Biotic medicines to treat a broader range of human diseases, including acquired metabolic diseases, inflammation and cancer. Synthetic Biotic medicines are designed to locally deliver combinations of complementary therapeutics to treat these complex disease states. Our portfolio of immuno-oncology (IO) programs is designed to deliver a combination of activities to modify the tumor microenvironment, activate the immune system and result in tumor reduction. In 2018 we intend to select a Synthetic Biotic clinical candidate in our IO program and advance it into preclinical studies to enable filing of an IND application with the FDA in 2019.

We have a collaboration with AbbVie S.à.r.l. (AbbVie) to develop Synthetic Biotic medicines for the treatment of inflammatory bowel disease (IBD) such as Crohn's disease and ulcerative colitis. We have also established a collaboration with Ginkgo Bioworks, a privately held synthetic biology company, to discover new living medicines to treat neurological and liver disorders. We may consider entering additional strategic partnerships in the future to maximize the value of our programs and our Synthetic Biotic platform.

To progress our pipeline, we collaborate with key disease experts who have developed robust models of relevant diseases to guide selection of our development candidates and to inform our translational medicine strategy. We focus on indications with clear biomarkers associated with disease progression that enable straightforward, early and ongoing assessment of potential clinical benefit throughout the development process. Our collaboration and intellectual property strategies additionally focus on building or leveraging existing third-party expertise in therapeutic research, preclinical and clinical development, regulatory affairs, manufacturing and commercialization, while also enhancing our industry-leading position in synthetic biology and metabolic engineering.

We have assembled a management team of seasoned biopharmaceutical executives with extensive, relevant experience at leading pharmaceutical companies such as Pfizer Inc., GlaxoSmithKline, Amgen, Biogen, Inc., AstraZeneca, Millennium Pharmaceuticals, Inc. (now Takeda Pharmaceutical Company Limited) and MedImmune, as well as the National Institutes of Health. We are supported by our Board of Directors and our scientific advisory board, each of which offer complementary experience in drug discovery and development, as well as expertise in building public companies, management, and business development. Our founding science came from the laboratories of Professors James Collins and Timothy Lu from the Massachusetts Institute of Technology (MIT), who remain highly engaged in guiding development and application of our platform.

Our pipeline of our programs is shown below.



As we advance our lead programs, we continue to learn and improve our Synthetic Biotic platform, which will inform all future portfolio programs. Consequently, we believe we have a robust engine for building a sustainable pipeline of novel, living medicines across a range of diseases. Through the strength of our internal team and network of partners, we believe we can deliver on the promise of Synthetic Biotic medicines to improve the lives of patients with significant unmet medical needs.

Our Strategy

Our goal is to use our Synthetic Biotic platform to design, develop and commercialize living medicines to transform the lives of patients for whom conventional treatment approaches are either not available or have limited efficacy and safety. To achieve our goal, we are pursuing the following key strategies:

Advance Clinical Development of the SYNB1020 Hyperammonemia Program. We initiated our first Phase 1 clinical trial of SYNB1020 to assess safety, tolerability and pharmacokinetics in healthy volunteers in June 2017. In November 2017, we announced top-line data from this study that demonstrated that SYNB1020 was safe and well-tolerated and achieved proof-of-mechanism. In the first quarter of 2018, we initiated the first clinical trial in patients with cirrhosis as a result of liver disease with elevated blood ammonia and expect to have top-line data from this study by the end of 2018. In addition, we expect to conduct a clinical trial in patients with UCD. Timing of initiation of this study will be informed by a number of factors including data from our Phase 1b / 2a study in patients with cirrhosis.

Advance SYNB1618 into Clinical Development. We are planning to initiate a Phase 1 / 2a clinical trial for SYNB1618 in the first half of 2018. The Phase 1 / 2a design will include healthy volunteers, as well as an adult patient cohort, to assess safety, tolerability and pharmacodynamics. We expect to have data from healthy volunteers, including insights from a mechanistic biomarker, by the end of 2018 and insights regarding therapeutic potential by the first half of 2019.

Expand Our Pipeline by Targeting Additional Rare Genetic Metabolic Diseases and Advancing our IO program. We plan to continue to leverage our expertise from our lead programs to accelerate development of our pipeline of clinical candidates for IEMs. Our portfolio includes additional discovery-stage Synthetic Biotic programs in lead optimization, including one for MSUD/IVA. Synthetic Biotic medicines can be designed to deliver a combination of mechanisms following oral administration or intra-tumoral injection and we are establishing a discovery-stage immuno-oncology portfolio. In 2018, we intend to advance clinical candidates into IND-enabling studies for both our MSUD/IVA and our first IO program.

Maximize the Value of the Synthetic Biotic Platform by Leveraging Strategic Partnerships. Our current partnership with AbbVie is focused on the discovery and development of Synthetic Biotic-based therapies for the treatment of IBD, and in June 2017 we announced our first milestone for this program. We expect to continue to explore strategic partnerships that would leverage the complementary capabilities of our partners to develop Synthetic Biotic medicines. and to maximize the value of our Synthetic Biotic platform.

Expand the Synthetic Biotic Platform to Lead in the Discovery and Development of Additional Living Medicines and Enabling Technologies. As leaders in the development of engineered probiotics for therapeutic use, we intend to advance the field of living medicines by continuing to innovate and broaden the potential of our Synthetic Biotic platform to deliver clinically meaningful benefits for patients. We intend to build on our expertise in design, optimization and manufacturing to further develop the Synthetic Biotic platform as a reproducible and scalable engine for generating a pipeline of innovative product candidates that address a broad range of diseases. We have established a collaboration with Ginkgo Bioworks, a privately held synthetic biology company, to discover new living medicines to treat neurological and liver disorders.

Protect and Leverage Our Intellectual Property Portfolio and Patents. We believe that we have a broad intellectual property portfolio that includes patents and patent applications relevant to the engineering, development, manufacturing and formulation of human therapeutic products based on synthetic biology and the metabolic engineering of probiotics. We intend to continue to protect and leverage our intellectual property assets by maintenance and expansion of our worldwide portfolio of intellectual property, including the pursuit of composition of matter and other intellectual property focused on our Synthetic Biotic programs and our technology platform.

Our Focus: Living Medicines

Our novel proprietary Synthetic Biotic discovery and development platform combines synthetic biology and metabolic engineering to re-design the genetic circuitry of beneficial probiotic bacteria and generate living medicines.

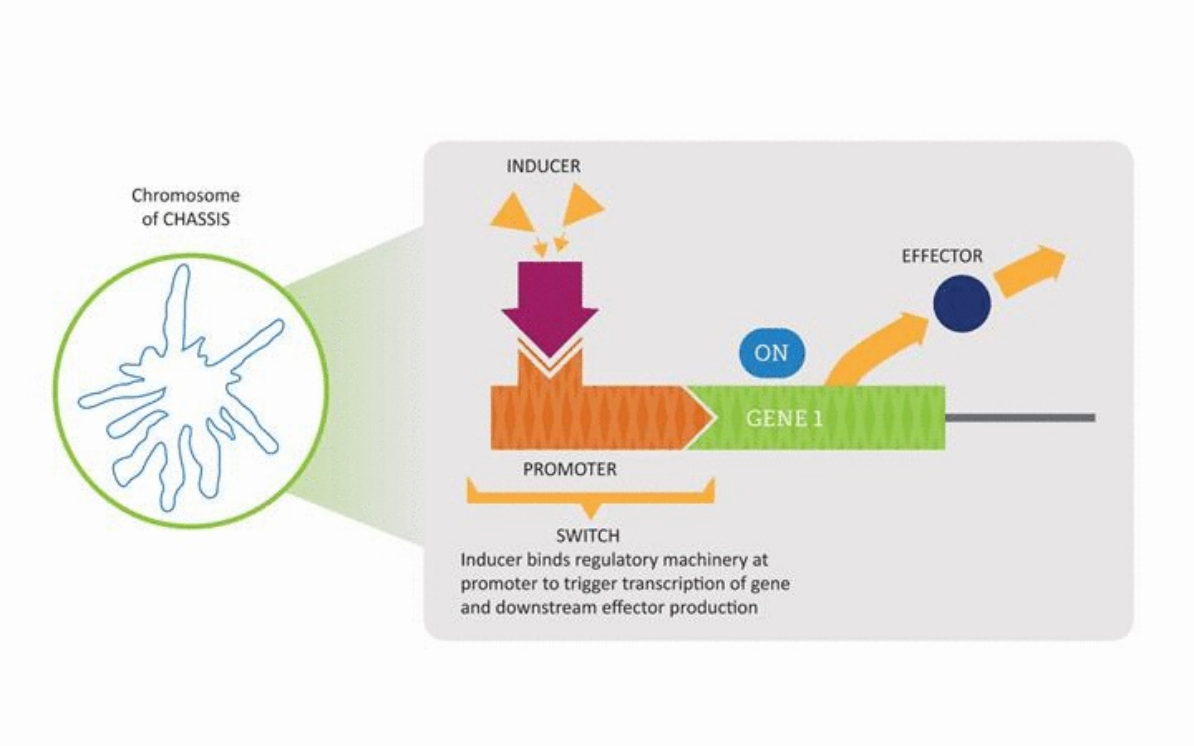
We believe living medicines have unique advantages as potential therapeutics. Living biologic cells can carry out functions that cannot be performed by many conventional drug treatments, such as small molecules or antibodies. In contrast to conventional therapeutics that engage a single target and address one molecular dysfunction, living medicines can be designed to dynamically sense diseased environments and respond with a programmed and combinatorial effect compensating for the dysfunction of entire processes or pathways missing in disease. Moreover, a living medicine can also function "catalytically," since a single living cell can carry out multiple cycles of the intended therapeutic activity during its time in the patient. Synthetic Biotic medicines can be designed to sense a local disease context within a patient's body and to respond by metabolizing toxic substances or delivering combinations of therapeutic factors.

Leveraging Synthetic Biology and Metabolic Engineering of Probiotic Bacteria to Produce Living Medicines

Probiotic Bacteria. Probiotic bacteria are non-pathogenic bacteria isolated from the human microbiota and widely used as supplements that are believed to provide health benefits. To confer a therapeutic effect, we leverage basic biological properties of bacteria to develop engineered probiotics. Bacteria have evolved over millions of years to adapt, survive, and carry out active metabolism in many different environments. They are also amenable to genetic manipulation.

Using Synthetic Biology to Generate Synthetic Biotic Medicines. Our scientists genetically engineer a beneficial probiotic bacterium with "wiring" or biological circuits to direct cellular biological processes in a manner analogous to designing electrical circuits. The critical parts of an engineered Synthetic Biotic medicine include (1) the chassis, or probiotic bacterium, (2) the effector module, which is a gene or pathway encoding the core biological activity that provides the therapeutic function, and (3) tunable switches to precisely determine the circumstances under which the effector module will be activated, as well as the potency, performance and output of the effectors themselves. We aim to precisely and appropriately control the amount, location and activity of our Synthetic Biotic medicines to address specific diseases.

Schematic of the Synthetic Biotic Platform Components: Chassis, Effector, Switch

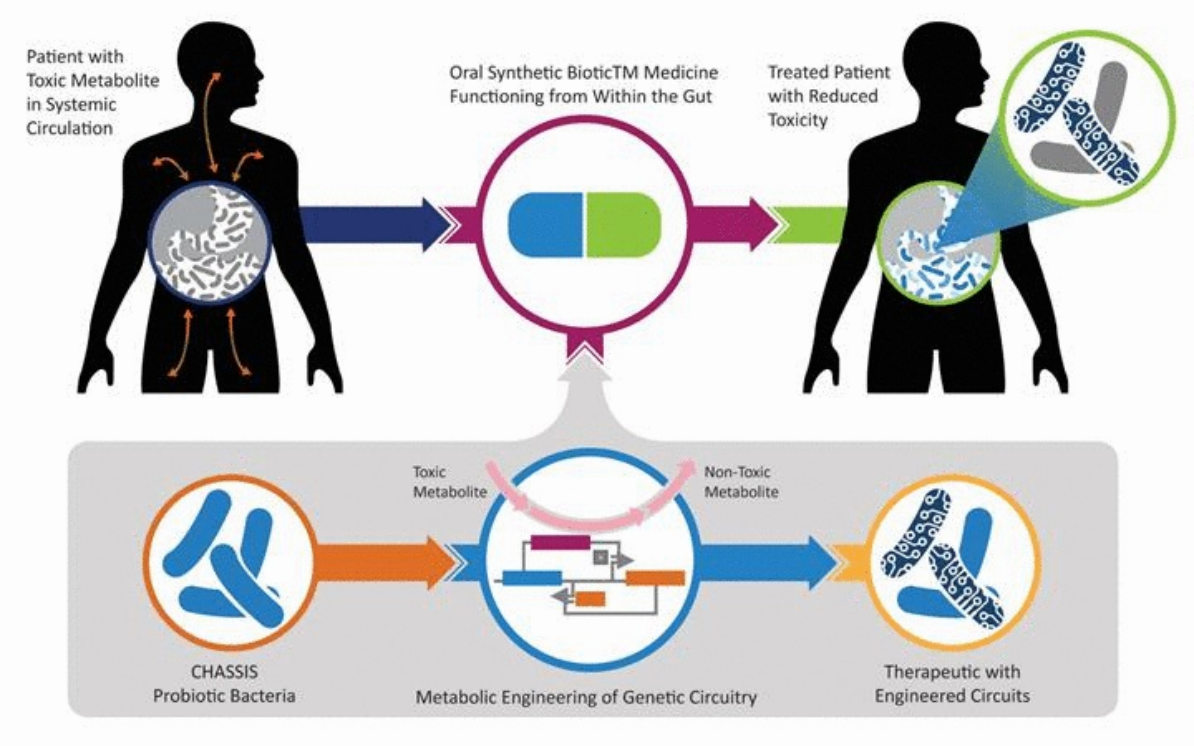


(1) The Chassis: Our Synthetic Biotic platform employs well-characterized bacteria used as probiotics to serve as the chassis upon which we build our living medicines. Our initial programs use *E. coli* Nissle, which is one of many non-pathogenic strains isolated from the human microbiota. *E. coli* Nissle is non-colonizing and has been used as a probiotic bacterial supplement for the last 20 years to promote gut health. Clinical studies have demonstrated that *E.coli* Nissle is rapidly cleared from most individuals with no significant safety issues (Clin. Transl. Sci. (2017) 00, 1—8). We also observed similar rates of clearance from subjects in our recent Phase 1 clinical trial of SYNB1020 in healthy volunteers. We believe *E. coli* Nissle's widespread use as a probiotic is evidence of its utility as a safe background chassis to apply synthetic biology to confer a therapeutic benefit. *E. coli* Nissle's metabolic systems and its genetic and metabolic machinery are well understood and provide a robust cellular context into which genetic information can be introduced with high efficiency and little or no damage to the fitness of the bacterium. In addition, the advanced nature of the synthetic biology toolkit available for *E. coli* Nissle enables rapid iterative design, assembly, and testing of prototype product candidates and remains unique among other bacterial and cellular engineering approaches.

(2) Building the Effector Module or Circuit: Synthetic Biotic medicines have the advantage that they can be designed with multiple pathway components. We have developed proprietary integration systems to direct stable insertion of multiple genetic circuits and pathways into optimal chromosomal locations, or "landing pads," of *E. coli* Nissle. This enables efficient expression of multiple genes encoding enzymes and other proteins. These activities may be further improved for therapeutic effect when combined or when under the control of tunable switches that determine when the mechanisms should be activated. Our Synthetic Biotic platform allows us to engineer two types of mechanistic activities into our Synthetic Biotic medicines: we can engineer living medicines that act as engines capable of metabolic transformations that can substitute or compensate for missing or defective pathways in a patient, and we can also engineer living medicines to produce therapeutically beneficial molecules. We have leveraged proprietary tools, know-how and intellectual property to build multiple Synthetic Biotic lead strains that produce therapeutically relevant effects in preclinical experiments. Progression of these strains as product candidates in diseases with high unmet need is based on prioritizing those with feasible drug development paths in terms of availability of informative animal models and existence of biomarkers to guide efficient clinical development.

(3) Tunable Switches: We also design and engineer proprietary switches to mediate the activity of the new pathways we introduce into our Synthetic Biotic medicines, with the goal of controlling the engineered circuit or its therapeutic output. To optimize the fitness of a Synthetic Biotic strain, it is critical that the effector is activated only at the appropriate time and place. The switches are based on engineering DNA elements called "inducible promoters" that are designed to sense and respond to disease states, specific environmental signals, or exogenously added inducing molecules. Our goal is to design and develop Synthetic Biotic medicines programmed with switches to produce therapeutic effects at precisely the right time and location such as the anaerobic environment of the gut, or in the context of local inflammation or other pathogenic factors.

Schematic of the Synthetic Biotic Platform to Engineer Probiotic Bacteria



Advantages of Our Synthetic Biotic Drug Development Platform and Synthetic Biotic Living Medicines

We believe our platform has the potential to provide safe and effective therapies for patients given several attributes of our Synthetic Biotic approach:

Unique Mechanisms to Treat Systemic Metabolic and Immune Dysfunction

Synthetic Biotic medicines may be programmed with entire pathways to degrade unwanted molecules or produce those that are beneficial. We believe metabolic pathway complementation is advantageous as compared to gene, RNA or enzyme replacement therapies that are limited to targeting a single gene or protein defect and may require several unique drug products to address genetically heterogeneous patient populations. By compensating with an entire pathway, Synthetic Biotic medicines may provide a therapeutic solution to broader disease populations as a single engineered therapeutic. We believe that our approach has advantages for the treatment of IEMs versus those other modalities that may be limited by delivery, transduction efficiency, duration of therapeutic expression and unclear potential for long-term dosing.

Synthetic Biotic medicines can also be designed to consume or produce metabolites or secrete and display proteins that may shift the tumor microenvironment of the immune system towards anti-tumor activity.

Local Therapeutic Delivery: Production of One or More Effectors at the Site of Disease

We believe that when delivered locally, Synthetic Biotic medicines have the potential to avoid the risks of dose-limiting side effects often associated with systemic therapies, especially when combinations of systemic therapies are required.

Our Synthetic Biotic programs for rare metabolic diseases are designed to be dosed orally, and act locally while transiting through the gut and, as a consequence, decrease toxic metabolite levels in the blood, thereby providing a systemic therapeutic benefit to the patient. This approach is well suited to regulate the amount of a metabolic byproduct in a patient's body, particularly when there is unconstrained metabolite flux between the systemic circulation and the gut. Given the potential for chronic oral dosing, Synthetic Biotic medicines may have benefits in terms of dose prediction, reversibility of activity and more traditional pricing strategies.

Currently, many complex diseases, such as inflammatory and autoimmune indications and cancer, require that patients are treated systemically with a combination of therapeutic agents, often resulting in poor tolerability, multiple adverse events and increased cost of therapy. Combinations of cytokine, antibody and protein therapies have potential for great benefit, but can be restricted by dose-limiting side effects when administered systemically. Our approach is to leverage the adaptability of *E. coli* Nissle to enable the combination of multiple activities into one therapy, which therefore could have greater efficacy while avoiding the toxic negative impact of multiple systemic therapies. We believe that the potential to program the control of expression of one or more proteins at the local disease site represents a unique approach to targeted therapy. We have also developed approaches to enhance the secretion of protein effectors to the extracellular environment. We are developing Synthetic Biotic medicines with the potential to normalize function of a dysregulated immune system. For example, in the case of inflammatory conditions, Synthetic Biotic medicines may be programmed to detect inflammation and respond with the production of one or more anti-inflammatory molecules. In oncology, our programs are being designed to secrete effectors to promote immune system activity against a tumor. These activities may further be combined with mechanisms that target tumor metabolism. By incorporating multiple actions, Synthetic Biotic medicines have the potential to address complex diseases while avoiding the risk of systemic toxicity and reducing development costs associated with combining systemic therapies.

Ability to Tune and Enhance Efficacy in Context of Disease

Our Synthetic Biotic platform includes a suite of switches to permit precise control of the timing and amount of therapeutic effect produced. Synthetic Biotic therapies may be designed such that they are activated to produce the desired effect in a particular disease environment, such as sites of inflammation. This tuning has the potential to increase the therapeutic window by increasing the margin between the level of medicine needed for efficacy relative to the risk of systemic toxic side effects.

Rational Design to Achieve Predictable Drug-like Properties

We have demonstrated the ability to move a program from concept to clinical development in as little as three years for our lead programs. Features of our Synthetic Biotic platform enable a highly efficient drug discovery and development process and have the potential to advance product candidates more rapidly and efficiently than is typically possible with other novel or emerging modalities. These include:

- *Single Strain as Safe Chassis.* There are several benefits of employing a single, safe and well-characterized probiotic bacterium such as *E. coli* Nissle as the background chassis. First, because our lead programs are based on *E. coli* Nissle, experience can be leveraged broadly across the portfolio, further optimizing the efficiency and reproducibility of discovery, development and manufacturing efforts. Next, the non-colonizing nature of *E. coli* Nissle can be combined with engineering approaches to optimize safety in terms of impact on the patient and the environment. *E. coli* Nissle can be engineered to require a specific exogenous nutrient supplement for growth, which limits the ability to replicate in the

human body and environment. By controlling replication, we can control the number of cells being administered to a patient, which limits patient-to-patient variability. Also, dependence on an essential nutritional supplement not available in the environment reduces biocontainment risk. Moreover, the risk of a Synthetic Biotic medicine to the environment is further limited given that it is disadvantaged in terms of fitness due to its modifications.

- *Predictive Pharmacology and Biomarkers*. Synthetic Biotic programs are designed to achieve a target activity, and the platform supports an iterative design-build-test cycle to improve performance for achieving this target. For example, Synthetic Biotic programs can be optimized by including multiple copies or regulated control of certain genes, by adding transporters for particular substrates or by optimizing enzymes for basic bacterial metabolism. These tools enable rational and iterative engineering cycles in the discovery phase.

  Biomarkers as indicators of mechanistic and clinical activity may also be engineered into Synthetic Biotic medicines from the beginning to drive optimization and decision-making. By assessing the activities of our Synthetic Biotic programs in *in vitro* and *in vivo* preclinical models, we can model activity in humans. As we progress into clinical studies, we expect our predictive pharmacology models will be further refined to inform dosing and development decisions for our additional programs.

- *Stability and Manufacturing*. Our lead Synthetic Biotic programs have advanced the platform by defining manufacturing processes that can be used for the entire portfolio. Our use of synthetic biology switches permits the precise control of engineered metabolic pathway activation. We use switches to suppress effector activity during manufacturing, enabling development of reproducible processes for generation of biomass and robust, cost-efficient scale up of product candidates.

  Manufacturing efforts have demonstrated reproducibility, yield and stability during small, medium and Phase 1 clinical-scale campaigns where we have developed and executed processes to manufacture 3,000 to 5,000 doses of active drug.

Our Product Pipeline

Our approach to selecting our initial programs is based on the potential of the Synthetic Biotic platform to uniquely address conditions in which there is (1) unmet medical need with (2) well understood biology that is (3) based on an imbalance of a metabolite and (4) where that metabolite is available within or originates from the gut lumen. Additional considerations include the availability of animal models, relevant biomarkers and feasible clinical development paths. Our initial clinical and preclinical programs are focused on certain IEMs and acquired metabolic diseases that share these characteristics. When delivered orally, Synthetic Biotic medicines are designed to act from the gut to compensate for the dysfunctional metabolic pathway with the intended consequence of reducing systemic levels of the toxic metabolites. We believe that clinical success in IEMs will enable us to demonstrate the potential of our oral Synthetic Biotic medicines to address metabolic dysfunction, while bringing meaningful change to lives of patients suffering from these debilitating conditions.

Our two lead therapeutic programs are being developed for the treatment of hyperammonemia and PKU. SYNB1020 is an oral therapy intended for the treatment of patients with hyperammonemia which includes elevated blood ammonia as a result of liver cirrhosis and UCDs. SYNB1618, is an oral therapy intended for the treatment of PKU, an IEM in which Phe accumulates in the body as a result of genetic defects.

Our early-stage metabolic pipeline includes discovery-stage product candidates for additional IEMs, including MSUD, IVA and organic acidemias.

We are also leveraging our proprietary technology platform to develop Synthetic Biotic medicines to treat a broader range of human diseases, including acquired metabolic diseases, inflammation and cancer. We are developing a portfolio of immuno-oncology programs using a rational approach to select combinations of relevant mechanisms to address specific tumor types.

We have also established a collaboration with Ginkgo Bioworks to discover new living medicines to treat neurological and liver disorders.

Our Initial Programs: Overview of IEMs

Patients with IEMs are born with faulty genes that result in the loss of a necessary enzyme function in an essential metabolic pathway and prevent the body from metabolizing commonly occurring byproducts of digestion. In patients with IEMs, these byproducts can accumulate to toxic levels in the gut and systemically throughout the body to cause serious health consequences, including irreversible neurological dysfunction. Although in some cases diet modification can be beneficial, unmet medical need remains as there are few current therapeutic treatments for IEMs.

While there are hundreds of genetic conditions grouped as IEMs, individual IEMs are considered orphan diseases, with each disease affecting fewer than 200,000 patients in the United States and fewer than five per 10,000 people in the European Union. IEMs include diseases of the urea cycle, amino acid metabolism and organic acid accumulation, among others. Many IEMs are thought to be underdiagnosed given the rarity of the conditions, potential for infant death and lack of available diagnostics and limited therapies.

SYNB1020 for Hyperammonemia: Urea Cycle Disorders and Hepatic Encephalopathy

Hyperammonemia is a metabolic condition characterized by an excess of ammonia in the blood. In healthy individuals, ammonia is primarily produced in the intestine as a byproduct of protein metabolism and microbial degradation of nitrogen-containing compounds. Ammonia itself is then converted to urea in the liver and is excreted in urine. However, if the liver's ability to convert ammonia to urea is compromised, either due to a genetic defect or acquired liver disease, ammonia accumulates in the blood. Elevated blood ammonia levels are toxic to the brain and can have severe consequences including neurologic crises requiring hospitalization, irreversible cognitive damage and death.

Overview of HE

The primary function of the liver is to filter out toxins, particularly ammonia, that are harmful if not sufficiently metabolized. In patients whose liver function is impaired, these toxins can accumulate in the blood stream and cause organ damage, particularly in the brain, which leads to a decline in brain function that is referred to as HE. Ammonia, a highly toxic substance produced in the body as a byproduct of protein metabolism, plays a key role in the development and prognosis of HE. While ammonia can be minimally metabolized by the brain in patients whose liver function is impaired, excessive ammonia levels can overwhelm the capacity of brain tissue and lead to a greater chance of developing brain swelling, coma and death for patients with HE. It is estimated that 30-45% of patients with chronic liver disease are affected by episodes of HE, and while many HE symptoms can be reversed with appropriate treatment, persistent impairment of memory and learning can occur.

HE severity is typically classified as covert or overt based largely on a patient's mental state. Covert HE is difficult to diagnose and is often observed in patients with cirrhosis who appear to have no obvious disorientation, but who display mild to moderate symptoms, such as difficulty concentrating, forgetfulness, changes in personality or behavior, and poor sleep. Patients with covert disease are at a higher risk of developing the more severe overt HE and have increasingly been recognized as a cause of morbidity linked with increased risk of traffic accidents and unemployment. Overt HE is associated with obvious mental disorientation and physical symptoms such as lethargy, seizures, tremors, organ failure, or brain swelling, that arise suddenly and may induce a coma or even death, particularly if not adequately treated. Overt HE is associated with a poor prognosis, with one-year survival estimates of 20% to 55%.

The current standard of care for overt HE includes lactulose, a non-absorbable disaccharide that prevents the absorption of ammonia in the gut. Lactulose is associated with GI side effects including both painful abdominal cramping and diarrhea. Non-absorbable antibiotics are also used to treat HE, often concurrently with lactulose. Xifaxan® (rifaximin), a broad-spectrum antibiotic used to reduce growth of bacteria that produce ammonia in the colon, was approved for HE based on improvements in the duration of remission, reduced hospitalizations over six months, and improved quality of life in patients with HE. Although rifaximin and lactulose are used therapeutically for overt HE, there are no approved treatments for covert HE.

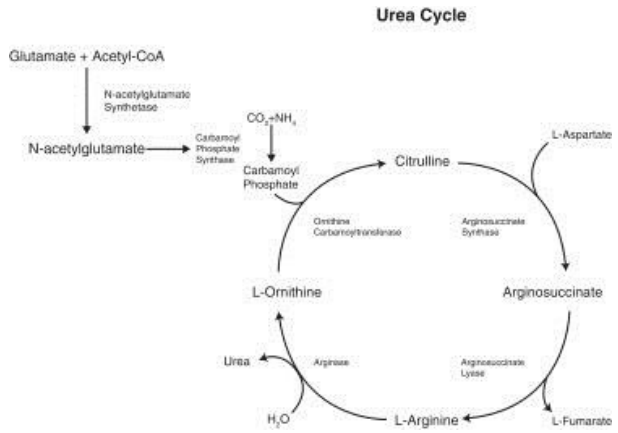
Morbidity and mortality associated with overt HE remains high and hospitalizations for HE impose a high burden on community resources. When current therapies fail to control overt HE, patients may be candidates for a potentially curative liver transplantation. There is a need for an effective therapy for patients with HE to reduce episodes of cognitive dysfunction and hospitalizations.

We believe that because ammonia is produced in the GI tract, an orally administered Synthetic Biotic medicine could be an effective therapeutic to reduce the levels of excess ammonia in the blood of patients with UCD and HE without the need for severe protein restriction and the risk of systemic toxicities.

Overview of UCD

UCDs are a group of rare but serious and potentially fatal, genetic diseases. The urea cycle is an enzymatic pathway in which waste nitrogen, produced as a byproduct of protein metabolism, is converted into urea by the liver and eliminated from the body through urine. Patients with a UCD carry a deficiency in one of the six enzymes necessary for completion of the urea cycle, resulting in accumulation of waste nitrogen throughout the body in the form of ammonia, a substance that is highly toxic even in small amounts.

Functional Urea Cycle



UCD patients have intermittent periods of hyperammonemia, the symptoms of which can range from mild (loss of appetite, vomiting, and lethargy) to a severe hyperammonemic crisis associated with long-term cognitive or behavioral impairment, toxic encephalopathy, and even death. Symptoms often depend on the severity of the enzyme deficiency, and patients with the most severe disease present shortly after birth. Hyperammonemia in newborn infants due to UCD could be catastrophic and is associated with 24% mortality. Patients with later onset disease could suffer from a period of hyperammonemia that is often triggered by stress or illness resulting in severe neurological symptoms and associated with a high risk of mortality.

While it is difficult to estimate the exact incidence and prevalence of UCD, as it is thought that many patients go undiagnosed, it is estimated that UCD occurs in approximately one in 35,000 births in the United States. Based on analysis of the newborn screening data and demographic data from the UCD Longitudinal Registry Study sponsored by the NIH, we believe the size of the diagnosed prevalent population in the United States to be approximately 2,000 patients and that approximately two-thirds of these patients are under 18 years of age.

The mainstay of management of UCD is dietary protein restriction. Patients must carefully balance their protein intake to ensure the body receives adequate nutrients for growth and development, while avoiding triggering hyperammonemia. However, varying protein requirements and variable growth and activity levels often elicit episodes of hyperammonemia that can result in irreversible neurological damage. To supplement for the lower protein intake, patients may incorporate amino acid dietary formulations, such as L-citrulline or L-arginine, into their diet. However, dietary management remains challenging, especially in infants and children.

The only available drugs, Buphenyl® (sodium phenylbutyrate) and Ravicti® (glycerol phenylbutyrate), are approved for the chronic management of patients with UCD and create an alternate pathway for nitrogen/ammonia elimination from the body, although patients must maintain protein restricted diets. Use of sodium phenylbutyrate is limited by pill burden, taste, and tolerability issues that can make compliance challenging. These therapies are mechanistically similar treatment options with limitations on maximal effect due to dose-related neurological safety issues (e.g., vomiting, nausea, headache, somnolence, confusion, or sleepiness) and enzymatic saturation and, therefore, the unmet need remains high.

When these management approaches fail to control chronic UCD-induced hyperammonemia, patients may be candidates for liver transplantation, which is potentially curative as it may correct the enzyme deficiency that causes UCD. However, transplants are limited by availability of donor organs, are associated with potentially life-threatening risks and require life-long suppression of the immune system. Ultimately, morbidity and mortality remain high in UCD, and patients continue to suffer hyperammonemic crises. We believe that a truly transformative therapy for UCD would be an effective oral medicine without systemic toxicity that will maintain blood ammonia concentrations at a safe level while allowing patients to eat a normal or only moderately restricted diet.

SYNB1020 Design

SYNB1020 is an orally administered, engineered strain of *E. coli* Nissle. SYNB1020 was designed to complement the missing or deficient enzyme functions in patients with hyperammonemia with an enhanced pathway to consume ammonia. This mechanism has applicability in liver disease where there is a need to reduce excess ammonia in the colon before it can be absorbed into the blood and cause HE episodes as well as the potential to treat the spectrum of enzyme deficiencies that underlie UCD.

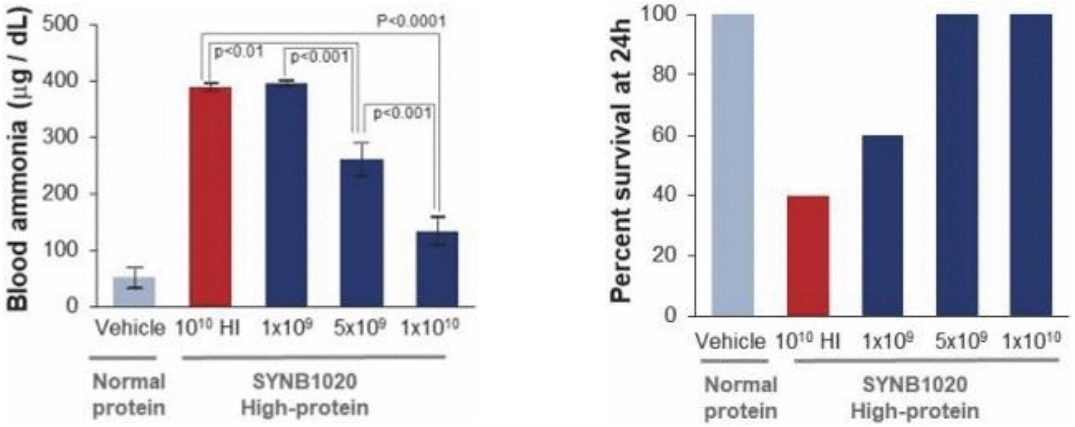
Our approach was to create a Synthetic Biotic medicine that would continuously consume excess ammonia where it is naturally produced in the colon and produce arginine. Arginine production is deficient in UCD patients due to a defect in the urea cycle, and patients are often treated with arginine supplements. *E. coli* Nissle has an endogenous arginine production pathway that uses four molecules of ammonia for every new molecule of arginine produced. We modified this pathway to significantly enhance arginine production.

SYNB1020 Nonclinical Program

In *in vitro* studies, SYNB1020 was demonstrated to consume ammonia and produce arginine at substantially higher rates compared with a control strain of *E. coli* Nissle that had not been engineered.

Preclinical Efficacy

In an animal model of hyperammonemia, the *spf-ash*/F1 mouse, we observed a dose-dependent decrease in blood ammonia in mice fed a high protein diet who received orally administered SYNB1020 compared to heat inactivated SYNB1020 at the highest dose. This reduction in blood ammonia resulted in improved survival of animals dosed with SYNB1020, compared to animals given the heat-inactivated control.



SYNB1020 lowers blood ammonia levels in a dose-dependent manner and increases survival in a mouse model of UCD

SYNB1020 Clinical Development Plan

In June 2017, we initiated a Phase 1 trial to evaluate the safety, tolerability, and gastrointestinal clearance of single and multiple doses of SYNB1020 in healthy volunteers. In November 2017, we announced top-line data that demonstrated that SYNB1020 was safe and well-tolerated for up to 14 days and achieved proof-of-mechanism. The Phase 1 trial was a randomized, double-blind, placebo-controlled trial of orally administered SYNB1020 evaluating ascending doses each administered on a single day and multiple ascending doses administered over 14 days. The primary objective of the trial was to assess safety and tolerability of SYNB1020 in healthy volunteers. Secondary objectives were to characterize the microbial kinetics of SYNB1020 in feces as measured by

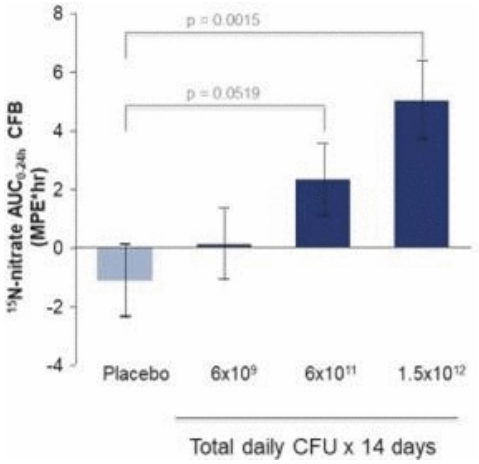
quantitative polymerase chain reaction (qPCR) and gastrointestinal tolerability assessed by the Gastrointestinal Symptom Rating Scale. Exploratory endpoints were designed to evaluate the pharmacodynamic effects of SYNB1020, including measurements of blood ammonia levels and other related biomarkers.

Fifty-two healthy volunteers were dosed orally with either SYNB1020 or placebo (ratio three to one), including 28 in seven cohorts in the SAD portion of the study and 24 subjects in three cohorts of the MAD portion of the trial. Complete safety results from the SAD and MAD Phase 1 trials demonstrate that SYNB1020 was well tolerated at total daily doses up to $1.5x10^{12}$ CFU for 14 days. Higher doses were associated with mild to moderate gastrointestinal symptoms, mainly nausea and vomiting.

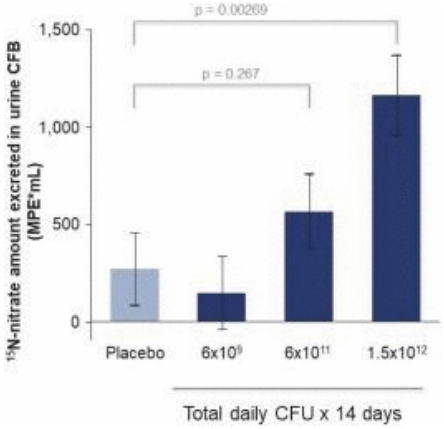
As expected, we did not observe changes in blood ammonia levels during the trial, as all subjects were healthy volunteers who entered the trial with well-controlled normal blood ammonia levels. In a stable-isotope tracer study in which subjects were orally administered ^{15}N-ammonium chloride, we observed a dose-dependent increase in ^{15}Nitrate, a terminal metabolite of arginine metabolism, in plasma and urine compared to baseline in SYNB1020-treated subjects but not in the placebo group. In subjects treated with the highest dose, the increase in blood and urinary nitrate was statistically-significant compared placebo-treated subjects. This observation is consistent with SYNB1020's mechanism of action which converts ammonia into arginine. In addition, conversion of ammonia into arginine was demonstrated in bacteria collected from the feces of treated subjects but not from placebo treated individuals thus demonstrating SYNB1020 retained activity during transit through the colon.

In addition to demonstrating that SYNB1020 was active *in vivo*, we obtained data on the exposure and clearance of SYNB1020 in treated subjects. We observed that amounts of SYNB1020 detected in the feces increased with increasing SYNB1020 dose and that the bacteria behave in a consistent and predictable way with all subjects completely excreting and clearing SYNB1020 from their systems within two weeks after the final dose.

(A)



(B)



Significant Dose-Dependent Effect on Plasma (A) and Urinary (B) ^{15}Nitrate in SYNB1020 treated healthy volunteers (MPE= molar percent excess)

SYNB1020 Upcoming Milestones

In the first quarter of 2018, we initiated the first clinical trial in patients with cirrhosis as a result of liver disease with elevated blood ammonia and expect to have top-line data by the end of 2018. In addition, we expect to conduct a clinical trial in patients with UCD. Timing of initiation of this study will be informed by a number of factors including data from our Phase 1b / 2a study in patients with cirrhosis.

SYNB1618 for PKU

PKU is a rare IEM caused by a genetic defect in the gene phenylalanine hydroxylase (PAH) leading to Phe accumulation in the blood and brain, where it is neurotoxic and can lead to neurological deficits and even death. Current disease management of PKU involves dietary protein restriction with the consumption of phenylalanine-free protein supplements. The only approved medication,

Kuvan ® (sapropterin dihydrochloride) is indicated for a subgroup of patients who have some residual PAH activity and does not eliminate the need for ongoing dietary management. Despite recommendations supporting life-long control of phenylalanine levels, compliance is challenging due to the highly restrictive nature of the diet, putting patients at risk for cognitive and psychiatric disease and supporting the need for novel treatment approaches.

Our Synthetic Biotic platform is well-suited to complement the missing enzyme function in PKU patients by providing alternative metabolic pathways to consume Phe. Our second IEM program, SYNB1618 for PKU, is designed to remove excess Phe from the blood by transforming it into non-toxic metabolites. SYNB1618 has demonstrated activity in a rodent model of PKU. In October 2017, the FDA granted SYNB1618 orphan drug designation for PKU. We are planning to initiate a Phase 1 / 2a clinical trial for SYNB1618 in the first half of 2018.

Overview of PKU

Phe is an essential amino acid that enters the body primarily through dietary protein and can be toxic if not sufficiently broken down and eliminated. The metabolism of Phe by the liver is dependent on adequate function of the liver enzyme PAH and the cofactor tetrahydrobiopterin (BH4) necessary for its activity. When the PAH gene is mutated and/or the production of BH4 is blocked, Phe cannot be sufficiently broken down and accumulates to toxic levels (i.e., hyperphenylalaninemia), which can cause irreversible brain damage. PKU is an inherited metabolic disease that presents as a severe form of hyperphenylalaninemia.

The disease course of PKU typically involves worsening neurological function that begins in infancy or early childhood. The clinical manifestations vary depending on severity of the enzyme mutation, the time of diagnosis and treatment initiation, and compliance. Symptoms may be extensive, such as severe cognitive impairment, or they may reflect more moderate neurocognitive or physical issues, such as below average intelligence, behavioral or mood disorders, memory loss, difficulty concentrating, decreased motor function, eczema, body odor, and tremors or seizures. A woman with PKU who becomes pregnant could develop maternal PKU if her diet is not strictly controlled, and there is a risk that the baby will be born with one or more birth defects such as cognitive impairment, microcephaly or congenital heart disease.

Based on the success of newborn screening efforts that began in developed countries in the 1960s, it is believed that nearly all PKU patients under the age of 40 have been diagnosed at birth. The National PKU Alliance estimates that in the United States there are currently 16,500 people living with PKU.

Currently, management of PKU requires a heavily modified diet that restricts protein intake, combined with essential amino acid and vitamin supplementation. Special medical foods, including phenylalanine-free protein formula, provide patients with dietary protein and fulfill other nutrient needs. However, it is challenging for most PKU patients to adhere to the restricted diet to the level that provides the necessary control of phenylalanine levels even with the efforts of supportive family and social networks. Patients often have trouble adhering to the diet, with particular challenges arising during times of increasing independence during adolescence. Furthermore, access to low protein foods can be challenging, as they are costlier and less nutritious than their higher protein, non-modified counterparts.

Kuvan® (sapropterin dihydrochloride) was the first drug approved for the treatment of PKU in 2007. It is indicated for the reduction of blood phenylalanine in patients with hyperphenylalaninemia with residual PAH activity as it is a synthetic form of the BH4 cofactor. Oral administration of Kuvan, along with protein restriction, has lowered phenylalanine levels in patients who have residual PAH activity and/or mild forms of the disease, which accounts for approximately 20-50% of the PKU population. However, Kuvan does not eliminate the need for ongoing dietary management in all patients. Large neutral amino acids have also demonstrated activity in blocking absorption of excess phenylalanine by the intestines and brain but are currently only administered in adolescents and adults.

A pegylated form of recombinant phenylalanine ammonia lyase (PAL), called Pegvaliase, an enzyme that metabolizes phenylalanine but does not require cofactor activity, is in clinical development for PKU and is not yet approved. While daily Pegvaliase injections have been proven to lower phenylalanine levels regardless of whether patients are following a low protein diet or not, many patients experience injection site reactions and/or develop antibodies to the product, which limits its effectiveness.

Despite recent improvements in PKU therapy, patients continue to suffer from poor outcomes. Even patients who are diagnosed and treated early have increased risk of neurocognitive abnormalities and psychiatric complications and are burdened by the life-long struggle to comply with strict dietary modifications. Available drug therapies demonstrate limited effectiveness, are accompanied by immunologic and other toxicities, and may still require patients to maintain a heavily restricted diet. We believe a truly transformative therapy would be orally-dosed and provide sustained, safe concentrations of phenylalanine while allowing for a normal or only moderately restricted diet. We believe that a Synthetic Biotic medicine could be an effective oral therapeutic that acts from the gut to

consume excess phenylalanine with the consequent effect of reducing levels in the blood without the need for severe phenylalanine restriction or risk of systemic toxicities.

SYNB1618 Design

SYNB1618 is a genetically-modified strain of *E. coli* Nissle engineered to express a synthetic pathway for transporting and metabolizing Phe in patients with PKU following oral administration. SYNB1618 was designed to overcome the missing enzyme function in patients with PKU with a complementary pathway to reduce phenylalanine levels.

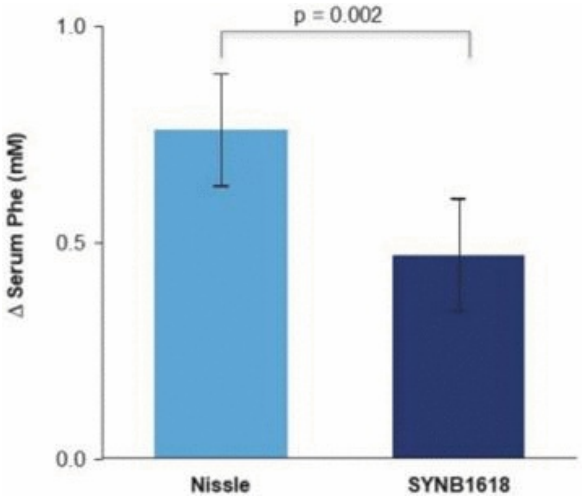
In designing SNYB1618, we integrated genes that convert phenylalanine to the non-toxic byproduct *trans* cinnamic acid (TCA), which is then converted in the liver to hippurate and excreted in the urine. The inclusion of multiple copies of these genes further enhanced activity.

SYNB1618 Nonclinical Program

Preclinical Efficacy Studies

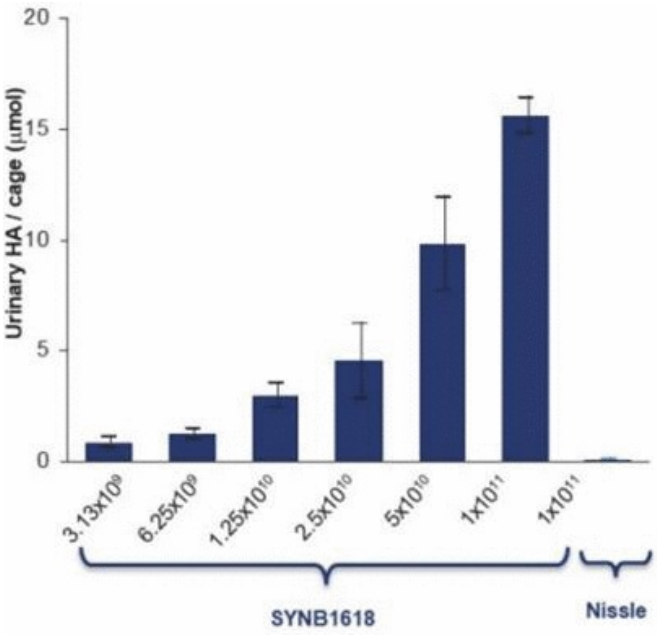
In vivo studies have focused on the *enu2-/-* mouse model that contains a mutation in the gene coding for PAH, the same enzyme that is deficient in PKU patients. Mice with this genetic defect maintained on normal chow accumulate Phe in their blood at concentrations greater than 2000 μM, which is similar to blood concentrations found in humans with PKU. On a Phe-restricted diet, blood Phe levels can be maintained at the healthier range of 100-200 μM.

Subcutaneous injection of mice on a Phe-restricted diet with phenylalanine results in a rapid increase in blood phenylalanine concentrations. The increase associated with this phenylalanine challenge was significantly blunted upon oral administration of SYNB1618 compared to administration of the non-engineered control strain that did not have the phenylalanine degradation pathway.



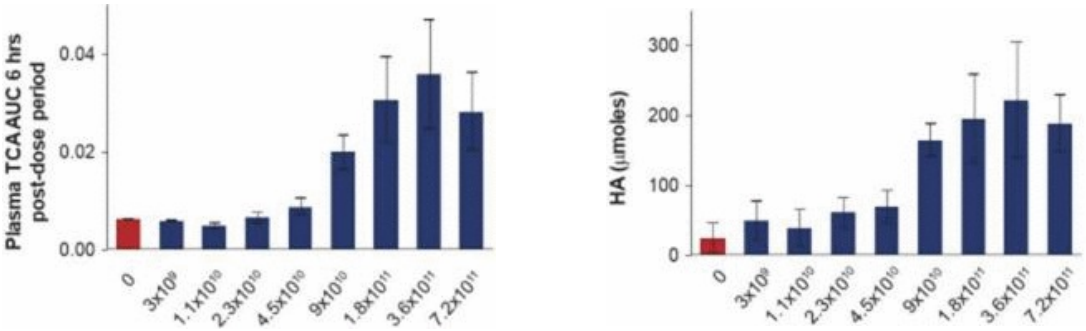
Reduced plasma Phe in enu2-/- mice treated with SYNB1618

The product of Phe degradation by SYNB1618, TCA, is converted to hippurate by liver enzymes and excreted in the urine and can be followed as a urinary biomarker of Phe degradation. Following treatment of *enu2-/-* mice with SYNB1618, urinary hippurate concentrations increased in a dose-dependent fashion compared to mice treated with an unengineered *E. coli* Nissle control.



Dose-responsive urinary hippuric acid production in a mouse model of PKU

Taken together, these data demonstrate that SYNB1618 has activity in the GI tract and can decrease blood Phe levels by degradation of recirculating phenylalanine, as well as dietary Phe. We have generated similar data in healthy non-human primates (NHPs) using our clinical candidate strain SYNB1618. With increasing oral doses of this single strain, we observe increasing levels of plasma TCA and urinary hippurate demonstrating that SYNB1618 is functional in the primate gut.



Dose-responsive plasma TCA and urinary hippuric acid production in NHPs

SYNB1618 Clinical Development Plan

In the first half of 2018 we plan to initiate a Phase 1 / 2a, randomized, double-blinded, placebo-controlled study to evaluate the safety, tolerability, and gastrointestinal clearance of SYNB1618. We expect to treat healthy adult volunteers with single- or multiple-ascending doses of SYNB1618 and subsequent cohorts of patients with PKU.

In addition to the primary endpoint of safety and tolerability, this study will evaluate the change from baseline in several pharmacodynamic parameters compared to placebo in order to characterize the kinetics of SYNB1618 in humans, and to provide mechanistic and clinical insights regarding urinary hippurate production and phenylalanine reduction.

Synthetic Biotic Medicines for Additional IEMs

The design, preclinical research, clinical planning and scalable manufacturing of our lead programs have already informed development of future clinical candidates. Our initial programs were selected based on applicability of the Synthetic Biotic platform to provide pathway complementation in IEMs in which the toxic metabolite was known to be associated with the relevant clinical endpoint and to be accessible in the GI tract. Additional examples in which there is opportunity to expand the potential of Synthetic Biotic medicines include discovery-stage programs for MSUD and IVA and organic acidemias. These are rare metabolic deficiencies in which a toxic metabolite can accumulate and lead to neurological decline and death. There is no approved therapy for these diseases and these patients are managed with dietary modifications, supportive care, and liver transplant when available.

A Synthetic Biotic Program for Maple Syrup Urine Disease and Isovaleric Acidemia

MSUD is an IEM that was first described in the 1950s as an inherited progressive neurological degenerative disorder. Patients with this disease have mutations in one of the protein subunits of the mitochondrial multi-enzyme complex called branched-chain alpha-ketoacid dehydrogenase. These mutations cause the patients to accumulate high levels of the branched chain amino acids (BCAA) leucine, isoleucine or valine that are neurotoxic and cause severe neurological pathologies characterized by brain edema, seizure, spasticity and respiratory irregularities that can lead to death. The MSUD name derives from the strong maple syrup odor in the urine of these patients. Similarly, IVA can result from a genetic defect in the same pathway leading to leucine accumulation. It is difficult to estimate the prevalence of these rare indications given few longitudinal studies. Based on estimates of the live birth rate of MSUD of 1:185,000 and IVA of 1:250,000, respectively, and applying assumptions to account for mortality and survival rates, it is estimated that there may be approximately 2,500 MSUD or IVA patients in the United States.

Currently available treatments for disorders involving the catabolism of BCAA are inadequate for the long-term management of the disorders and have severe limitations. A low protein/BCAA-restricted diet, with micronutrient and vitamin supplementation as necessary, is the widely-accepted long-term disease management strategy. However, BCAA-intake restrictions can be problematic since these amino acids are also essential nutrients that can only be acquired through diet and are necessary for critical metabolic activities such as protein synthesis. Even with proper monitoring and patient compliance, branched chain amino acid dietary restrictions result in a high incidence of mental retardation and mortality. MSUD is cured by liver transplantation; however, limited availability of donor organs, costs, and the need to rely on life-long immunosuppressant therapy are limiting. Therefore, there is significant unmet need for an effective, reliable, and/or long-term treatment for disorders involving the catabolism of branched chain amino acids.

We have built Synthetic Biotic medicines to modulate the expression of two BCAA transporters and three BCAA-degrading enzymes. Results *in vitro* demonstrate the efficient degradation of BCAAs into non-toxic branched-chain alcohols that can then be further metabolized and eliminated from the body. In preliminary studies in a mouse model of MSUD, the oral delivery of the Synthetic Biotic strain suppresses the increase in blood BCAA levels induced by a high-protein diet and prevents the associated waning, or moribund, phenotype as measured by improved locomotor activity. Based on the *in vivo* therapeutic effects observed, we intend to select a Synthetic Biotic lead candidate and advance it into IND-enabling studies in 2018 as a potential therapy for MSUD and IVA patients.

Synthetic Biotic Medicines for Broader Metabolic Disease

Our Synthetic Biotic platform combined with our product discovery and development capabilities drive the potential for multiple clinically meaningful opportunities for patients affected by a broad set of metabolic diseases of the liver and central nervous system. For these indications, there is need for a safe, oral therapies with local activity in the gut to reset a metabolic dysfunction. We have established a partnership with Ginkgo Bioworks to explore potential development programs in liver and CNS indications that could be developed in the context of a strategic partnership.

Synthetic Biotic Medicines for Immunomodulation

Our Synthetic Biotic platform has the potential to generate clinically meaningful therapies for patients affected by immune-mediated diseases.

Our Synthetic Biotic Medicines for Immuno-Oncology

We believe boosting the body's immune response against tumor cells is one of the most promising advances in the treatment of cancer. The so-called "hot tumors", those with robust immune cell infiltration, specifically by T cells, have responded well to immunotherapies such as the PD-1 and CTLA-4 checkpoint inhibitors. Checkpoint inhibitors work by blocking pathways that inhibit T cells thus enabling them to recognize and destroy the tumor. Checkpoint inhibitors have significantly extended the lives of patients with several cancer types and, in some cases, have resulted in complete clinical responses. However, a large proportion of tumors are "cold" (i.e., they lack T cells), and respond poorly to immunotherapy.

Our goal is to leverage our Synthetic Biotic platform to design living medicines that can modify the tumor microenvironment to convert "cold tumors" into "hot tumors". We believe that this transition will expand the patient population that could benefit from immunotherapy. Our approach is designed to deliver robust therapeutic combinations directly to the tumors, without significant systemic exposure. Synthetic Biotic medicines are being developed to be administered by an intra-tumor injection or, in the case of GI cancers, by oral administration and can be engineered to perform three types of functions: metabolic conversions, secretions of proteins and bacterial surface display of specific single chain antibody domains, known as scFvs.

We believe our Synthetic Biotic platform can approach "cold" tumors in a rational, mechanistic way, and can deliver multiple validated mechanisms to elicit specific immune responses in the tumor microenvironment. Our main mechanistic areas of focus in the context of tumor immunology include:

- *Immune activation and priming:* Our bacterial Synthetic Biotic chassis is predicted to engage innate immune cells in the tumor microenvironment, thereby initiating an immune cascade to activate and direct T cells to the tumor. Lack of effective presentation of tumor-specific antigens to T cells is recognized as a significant limitation to the initiation of immune responses in tumors. We are building and optimizing Synthetic Biotics medicines with the potential of addressing this issue. For example, we have built Synthetic Biotic candidates that produce a STING (STimulator of INterferon Genes) agonist (SYN-STING). The STING pathway plays a critical role in the control of tumor growth at both steady state and following a variety of cytolytic and immune-based therapies by initiating an antitumor immune response and driving tumor regression. SYN-STING can be delivered directly into the tumor enabling its localized site of action in the tumor microenvironment. The approach of using intra-tumoral injection elicits innate responses in the tumor but not in the systemic circulation, decreasing the risk of adverse events that may arise from the production of systemic interferon.
- *Immune augmentation/Reversal of immunosuppression:* We have developed strains that actively consume and transform immunosuppressive metabolites in the tumor microenvironment, with the goal of setting up a milieu conducive to immune activation and tumor destruction. For example, we have built Synthetic Biotic candidates that consume Kyneurinine to reprogram the tumor microenvironment and to enable recognition of the tumor by the adaptive immune system.
- *T cell expansion:* Tumor antigen-specific T cell expansion and prevention of exhaustion are recognized as key objectives for successful cancer immunotherapy. We are developing Synthetic Biotic medicines programs to secrete specific cytokines to promote T cell survival and expansion.
- *Stromal modulation:* The physical structure of tumors is receiving increasing attention as emerging data demonstrate its importance in orchestrating tumor growth, immune evasion and resistance to chemotherapy, such as in pancreatic ductal adenocarcinoma. Tumor-derived extracellular matrix proteins can limit the perfusion of drugs or antibodies, contributing to the remarkable resistance of this tumor type to therapy. We have developed strains that secrete active enzymes with the capacity to remodel extracellular matrix proteins to make the tumor more permeable.

Our product vision for immuno-oncology is to use a rational approach to selecting and combining relevant mechanisms of action for the microenvironment of specific tumor types. For example, in animal models we are evaluating Synthetic Biotic medicines that combine the antigen release, activation and priming activities of a STING agonist with the immune augmentation and T cell expansion effects of Kyneurine consumption. In early studies with intra-tumoral administration, in preclinical mouse models, we have observed high rates of durable response with evidence of an effect not only on the treated tumor, but also a shrinking of tumors outside the scope of the localized treatment (abscopal effect), while avoiding systemic toxicity. In 2018, we intend to select a Synthetic Biotic lead candidate in this program and advance it into IND-enabling studies.

Our Synthetic Biotic Medicines for Inflammatory Bowel Disease

Among immune conditions, IBD is particularly attractive for our Synthetic Biotic platform, as it allows us to leverage knowledge and expertise gleaned from our metabolic programs to develop living medicines that can act locally at the site of disease in the gut. Because our approach is based on local delivery to the site of inflammation and not on systemic administration, we anticipate that our Synthetic Biotic medicines may offer an attractive safety profile in this setting. In 2015, we entered into a multi-year global collaboration with AbbVie focused on the discovery and development of Synthetic Biotic medicines for the treatment of IBD. In June 2017 we announced the achievement of the first milestone in this collaboration.

IBD is a group of diseases characterized by significant local inflammation in the GI tract typically driven by T cells, activated macrophages and compromised function of the epithelial barrier. IBD pathogenesis is linked to both genetic and environmental factors and may be caused by altered interactions between gut microbes and the intestinal immune system. Current approaches to treat IBD are focused on therapeutics that modulate the immune system and suppress inflammation. These therapies include steroids, such as prednisone, and tumor necrosis factor inhibitors, such as Humira® (adalimumab). However, these approaches are associated with systemic immunosuppression, which includes greater susceptibility to infectious diseases and cancer. It is estimated that between 1.0-1.3 million patients have IBD in the United States.

Compromised gut barrier function also plays a central role in autoimmune diseases pathogenesis. A single layer of epithelial cells separates the luminal contents of the gut from the host circulatory system and the immune cells in the body. Disrupting the epithelial layer can lead to pathological exposure of foreign antigens from the lumen resulting in increased susceptibility to autoimmune disorders. The interplay between the gut microbiota and the host is thought to play a key role in the maintenance of the epithelial barrier as well as homeostatic immunity. Thus, enhancing barrier function and reducing inflammation in the gastrointestinal tract are potential therapeutic mechanisms for the treatment or prevention of autoimmune disorders. Our Synthetic Biotic platform allows for the effective programming of *E. coli* Nissle to execute these functions, including the metabolic production of factors such short chain fatty acids to enhance barrier function, and secreting proteins, such as immunomodulatory cytokines.

Collaboration Agreements

To accelerate the development and commercialization of Synthetic Biotic medicines to patients, we have formed, and intend to seek other opportunities to form, strategic alliances with collaborators that can expand our pipeline of therapeutic development and product candidates. We also work, and intend to seek additional opportunities to work, with multiple academic, research and translational medicine organizations and entities to deepen our understanding and development of living medicines with the potential to treat disease and disorders.

AbbVie

In July 2015, we entered into a license agreement with our subsidiary Synlogic IBDCo, Inc. (IBDCo) and an Agreement and Plan of Merger with AbbVie (together, the AbbVie Agreements) to collaborate on the discovery and development of Synthetic Biotic medicines for the treatment of IBD. The AbbVie Agreements provide AbbVie with an exclusive option to acquire IBDCo, which would then have an exclusive worldwide license to develop and commercialize up to three specified Synthetic Biotic medicines for the treatment of IBD.

Under the terms of the collaboration with AbbVie, we have the responsibility to discover, characterize and optimize one lead Synthetic Biotic product candidate to the point of a IND-enabling package, together with two backup product candidates, through a research and development program covering a limited number of effectors that modulate the IBD pathophysiology. The multi-year collaboration combines AbbVie's expertise in inflammatory diseases with our expertise in synthetic biology and metabolic engineering. AbbVie agreed to pay IBDCo an upfront payment of $2.0 million, received in December 2015, and up to $16.5 million upon the achievement of certain research and development milestones. In May 2017, IBDCo achieved the first of these research and development milestones under the AbbVie Agreement for which it received $2.0 million.

If AbbVie accepts our IND-enabling package covering the lead Synthetic Biotic product candidate, AbbVie may exercise its exclusive option to acquire IBDCo, which would house the lead and two backup product candidates. If this option is exercised, AbbVie would pay us an option exercise fee upon the closing of the IBDCo merger and we would be eligible to receive future development, regulatory and commercial milestone payments, and low single digit royalties on sales of the Synthetic Biotic medicines. In addition, AbbVie would then assume full control of all further clinical development and commercial activity, including responsibility for all expenses and decisions.

Potential Future Collaborations

We view strategic partnerships as important drivers for helping accelerate our goal of effectively treating patients, and we will continue to seek strategic alliances with collaborators who can help fund, develop and commercialize our novel therapeutic development and product candidates, particularly in large metabolic indications and immuno-oncology. As the potential application of our Synthetic Biotics platform is extremely broad, we also plan to continue to identify academic, research and translational medicine organizations and entities that can contribute expertise and resources to our programs, to allow us to more rapidly expand our impact to broader patient populations.

Intellectual Property and Technology Licenses

We strive to protect and enhance the proprietary technology, inventions, and improvements that are commercially important to our business, including seeking, maintaining, and defending patent rights, whether developed internally or licensed from our collaborators or other third parties. Our policy is to seek to protect our proprietary position by, among other methods, filing patent applications in the United States and in jurisdictions outside of the United States related to our proprietary technology, inventions, improvements, and product candidates that are important to the development and implementation of our business. We also rely on trade secrets and know-how relating to our proprietary technology and product candidates, continuing innovation, and in-licensing opportunities to develop, strengthen, and maintain our proprietary position in the field of synthetic biology. We additionally rely on data exclusivity, market exclusivity, and patent term extensions when available, and plan to seek and rely on regulatory protection afforded through orphan drug designations. Our commercial success may depend in part on our ability to obtain and maintain patent and other proprietary protection for our technology, inventions, and improvements; to preserve the confidentiality of our trade secrets; to maintain our licenses to use intellectual property owned by third parties; to defend and enforce our proprietary rights, including our patents; and to operate without infringing on the valid and enforceable patents and other proprietary rights of third parties.

We believe we are well positioned in terms of intellectual property because we:

- have built and expanded, and intend to continue expansion in, a broad worldwide portfolio of intellectual property, including patents and patent applications, in areas relevant to the development, manufacturing and formulation of human therapeutic products using live biotherapeutics based on synthetic biology;
- intend to take additional steps, where appropriate, to further protect our intellectual property rights, including, for example, through the use of copyright and trademark protection, as well as regulatory protection available via orphan drug designations, data exclusivity, market exclusivity and patent term extensions.

We believe our intellectual property portfolio provides broad coverage of our Synthetic Biotic platform and applicable disease-related technologies, which are directed to diseases and conditions associated with hyperammonemia, hyperphenylalanemia, other IEMs and acquired metabolic disorders, autoimmune and other inflammatory disorders and oncology. As of March 1, 2018, we had 151 Synlogic-owned and in-licensed patents and patent applications in U.S. and foreign jurisdictions, of which 20 have been issued or allowed.

Synlogic Intellectual Property

Disease-related applications

The disease-related applications in our intellectual property portfolio relate to certain pathological conditions including, but not limited to hyperammonemia, hyperphenylalaninemia, diseases and conditions arising from IEMs, acquired metabolic disorders diseases and conditions associated with an inflammatory state, diseases associated with gut inflammation, compromised gut mucosal barrier (leaky gut), and various autoimmune disorders as well as use in immuno-oncology and provide coverage for engineered bacteria having genetic circuitry designed to specifically address those conditions and the associated disease states. The intellectual property portfolio provides coverage for compositions directed to engineered bacterial strains, methods of making the bacterial strains and methods for treating diseases. Currently, intellectual property relating to this technology includes pending applications in U.S. and foreign jurisdictions, as well as several issued U.S. patents directed to composition of matter and pharmaceutical composition claims covering our clinical candidates. The patent term for our current IP has expiration dates ranging from December 2035 to February 2037, depending on the indication and excluding any patent term adjustments or extensions.

Our current intellectual property for IBD, which is being developed in collaboration with AbbVie, is Synlogic-owned. In addition, we have one U.S. application and five international applications relating to this technology which is jointly owned by us and MIT, which expires in December 2035, excluding any patent term adjustments or extensions.

Platform Technology Applications

In addition to the disease-related technology, our intellectual property portfolio also includes applications directed to platform technologies developed internally by us. Exemplary platform technologies include bacterial chassis-related and genetic circuitry-related technological developments, including, for example, improvements in inducible gene regulation, control of bacterial cell growth, including auto-regulation thereof, and systems for importing metabolites, as well as secreting therapeutic effectors. These platform technologies, and our intellectual property coverage thereof, are broadly applicable to our therapeutic Synthetic Biotic medicines.

Technology Licenses

In addition to our own patent applications, we have licensed patents and patent applications from MIT and Trustees of Boston University (BU) to access intellectual property covering synthetic biology circuitry that we are exploring and developing. The intellectual property licensed from MIT and BU relates to genetic circuitry (designed to be modular components for integration into biological systems), cells containing the genetic circuitry, and methods and systems for gene regulation using the genetic circuitry.

The intellectual property licensed from MIT includes applications related to genome editing systems used to target specific genes for recombination and methods for delivering a gene editing system to endogenous bacteria. It also includes applications directed to genetic circuits and biological systems for regulating gene expression using various recombinase-based and other promoter systems, including promoter systems that respond to different levels of an input signal. The MIT intellectual property also covers methods for identifying mutant promoters that have an altered level of response to an input signal and methods of controlling gene expression in certain bacteria. In addition, the MIT intellectual property includes a PCT application jointly owned by us and MIT, directed to engineered bacteria and methods for treating inflammatory bowel disease. The licensed patents and applications from the MIT have expiration dates ranging from 2033 to 2037, excluding any patent term adjustments or extensions.

The intellectual property licensed from BU includes patents and applications relates to genetic circuitry and biological systems for controlling gene expression employing the genetic circuits, detecting the production of a target gene product, and delivering genetic circuits to endogenous bacteria. The various genetic circuits are designed to respond to external cues and also designed to tighten control of gene expression regulated by inducible and constitutive promoter systems using a variety of genetic components, for example, sensors, inducers, repressors, antisense, stem-loop sequences, recombinases, RNAi, inverted sequences, and ribosome-binding site sequences, to generate various promoter toggle switches, adjustable threshold switches, and oscillator switches, among others. In addition, the BU intellectual property covers biocontainment systems that couple environmental sensing with circuit-based control of cell viability. The licensed patents and applications from BU have expiration dates ranging from 2019 to 2036, excluding any patent term adjustments or extensions.

Massachusetts Institute of Technology (MIT) License

We entered into a license agreement with MIT, effective November 2015 and amended as of July 2016. Under this license agreement, MIT granted us a worldwide license under certain patents and patent applications that is exclusive in the therapeutics and theranostics fields and non-exclusive in the internal research field. The license grants us rights to develop, make, have made, use, import, sell, and offer to sell licensed products and processes. We do not have the right to control prosecution of these licensed patents and patent applications and our rights to enforce the in-licensed patent rights are subject to certain limitations.

Under the terms of the MIT license agreement, as consideration for the license, we paid to MIT an upfront license fee and are eligible to receive an annual maintenance fee, milestone fees, sublicense fees if we should ever grant a sublicense to the licensed patents or patent applications and low single-digit royalty percentages on net sales of licensed products. MIT also receives reimbursement from us for patent prosecution expenses. We are subject to diligence requirements to develop licensed products in accordance with certain development milestones.

BU and MIT License

We entered into a license agreement with BU and MIT effective October 2015 and signed April 2017. Howard Hughes Medical Institute (HHMI) has an ownership interest in certain patent rights licensed to us under this license, which interest HHMI assigned to BU. HHMI is not a party to the license agreement, but receives the benefit of certain terms. Under this license agreement, BU and MIT granted us a worldwide license under certain patents and patent applications that is exclusive in the therapeutics and theranostics fields and non-exclusive in the diagnostic and internal research field. The license grants us rights to make, have made, use, lease, import, sell, and offer to sell licensed products and processes. We do not have the right to control prosecution of the licensed patents and patent applications, and our rights to enforce the licensed patent rights are subject to certain limitations. Under the terms of this license agreement, as partial consideration for the license, BU, MIT and MIT's agent Omega Cambridge SPV, L.P. were issued an

aggregate of 325,377 shares of our common stock. In addition, we paid an upfront fee, and reimbursed past patent prosecution costs, and the licensors are eligible to receive from us an annual maintenance fee, milestone fees, sublicense fees if we should ever grant a sublicense to the licensed patents and patent applications and low single-digit royalty percentages on net sales of licensed products. BU also receives reimbursement from us for patent prosecution expenses. We are subject to diligence requirements to develop licensed products in accordance with certain development milestones.

Individual patents extend for varying periods of time, depending upon the date of filing of the patent application, the date of patent issuance, and the legal term of patents in the countries in which they are obtained. Generally, patents issued for applications filed in the United States are effective for 20 years from the earliest effective non-provisional filing date. In addition, in certain instances, a patent term can be extended to account for delays in prosecution at the U.S. Patent and Trademark Office and/or to recapture a portion of the term effectively lost as a result of the FDA regulatory review period. For regulatory delays, the restoration period cannot be longer than five years and the total patent term, including the restoration period, must not exceed 14 years following FDA approval. The duration of patents outside of the United States varies in accordance with provisions of applicable local law, but typically is also 20 years from the earliest effective non-provisional filing date. However, the actual protection afforded by a patent varies on a product-by-product basis, from country-to-country, and depends upon many factors, including the type of patent, the scope of its coverage, the availability of regulatory-related extensions, the availability of legal remedies in a particular country, and the validity and enforceability of the patent.

The patent positions of companies like us are generally uncertain and involve complex legal and factual questions. No consistent policy regarding the scope of claims allowable in patents in the field of synthetic biology has emerged in the United States. The patent situation outside of the United States is even more uncertain. With respect to both licensed and company-owned intellectual property, we cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future, nor can we be sure that any of our existing patents or any patents that may be granted to us the future will be commercially useful in protecting our products and the methods used to manufacture those products. For additional risks, please see the section entitled “Risk Factors—Risks Related to Intellectual Property”.

Trademarks

Our registered trademark portfolio currently contains six registered trademarks, and nine pending applications

Other

Generally, we seek to protect our technology and product candidates, in part, by entering into confidentiality agreements with those who have access to our confidential information, including employees, contractors, consultants, collaborators, and advisors. In some circumstances, we may rely on trade secrets to protect our technology. We seek to preserve the integrity and confidentiality of our proprietary technology, trade secrets and processes by maintaining physical security of our premises and physical and electronic security of our information technology systems. Although we have confidence in these individuals, organizations, and systems, agreements or security measures may be breached and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or may be independently discovered by competitors. To the extent that company employees, contractors, consultants, collaborators, and advisors use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions. For this and more comprehensive risks related to our proprietary technology, inventions, improvements and products, please see the section entitled “Risk Factors—Risks Related to Intellectual Property,” in this prospectus supplement.

Regulatory Matters

Government Regulation and Product Approval

Government authorities in the United States, at the federal, state and local level, and other countries extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, labeling, packaging, storage, record keeping, promotion, advertising, distribution, marketing and export and import of products such as those we are developing. A new drug must be approved by the FDA through the NDA process and a new biologic must be approved by the FDA through the biologics license application (BLA), process before it may be legally marketed in the United States

U.S. Drug Development Process

In the United States, the FDA regulates drugs under the Federal Food, Drug, and Cosmetic Act (FDCA) and in the case of biologics, also under the Public Health Service Act (PHSA) and implementing regulations. Our product candidates will be regulated by the FDA as biologics. The process of obtaining regulatory approvals and the subsequent compliance with applicable federal, state,

local, and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable U.S. requirements at any time during the product development process, approval process or after approval, may subject an applicant to administrative or judicial sanctions. These sanctions could include the FDA's refusal to approve pending applications, withdrawal of an approval, license revocation, a clinical hold, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, restitution, disgorgement, or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us. The process required by the FDA before a biologic may be marketed in the United States generally involves the following:

- completion of preclinical laboratory tests, animal studies and formulation studies according to GLP other applicable regulations;
- submission to the FDA of an IND application which must become effective before human clinical trials may begin;
- performance of adequate and well controlled human clinical trials according to GCP to establish the safety and efficacy of the proposed drug for its intended use;
- development and approval of a companion diagnostic device if the FDA or the sponsor believes that its use is essential for the safe and effective use of a corresponding product;
- submission to the FDA of a BLA;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the drug is produced to assess compliance with cGMP to assure that the facilities, methods and controls are adequate to preserve the drug's identity, strength, quality and purity; and
- FDA review and approval of the BLA.

Once a pharmaceutical candidate is identified for development, it enters the preclinical testing stage. Preclinical tests include laboratory evaluations of product chemistry, toxicity and formulation, as well as animal studies. An IND sponsor must submit the results of the preclinical tests, together with manufacturing information and analytical data, to the FDA as part of the IND. In June 2016, the FDA issued an updated guidance for the industry entitled "Early Clinical Trials with Live Biotherapeutic Products: Chemistry, Manufacturing and Control Information," which included recommendations from the FDA regarding the chemistry, manufacturing and control information that should be included in an IND for early clinical trials with live biotheraeutic products. This Guidance reflects the FDA's thinking on a topic at the time that it was issued and although it is not binding on the FDA or a sponsor, it provided us with additional information about what should be included in our IND. The sponsor will also include a protocol detailing, among other things, the objectives of the first phase of the clinical trial, the parameters to be used in monitoring safety, and the effectiveness criteria to be evaluated, if the first phase lends itself to an efficacy evaluation. Some preclinical testing may continue even after the IND is submitted. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, places the clinical trial on a clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. Clinical holds also may be imposed by the FDA at any time before or during clinical trials due to safety concerns about ongoing or proposed clinical trials or non-compliance with specific FDA requirements, and the trials may not begin or continue until the FDA notifies the sponsor that the hold has been lifted.

All clinical trials must be conducted under the supervision of one or more qualified investigators in accordance with GCP requirements. They must be conducted under protocols detailing the objectives of the trial, dosing procedures, subject selection and exclusion criteria and the safety and effectiveness criteria to be evaluated. Each protocol must be submitted to the FDA as part of the IND, and timely safety reports must be submitted to the FDA and the investigators for serious and unexpected adverse events. An institutional review board (IRB) at each institution participating in the clinical trial must review and approve each protocol before a clinical trial commences at that institution and must also approve the information regarding the trial and the consent form that must be provided to each trial subject or his or her legal representative, monitor the study until completed and otherwise comply with IRB regulations.

Human clinical trials are typically conducted in three sequential phases that may overlap or be combined:

- Phase 1: The product candidate is initially introduced into healthy human subjects and tested for safety, dosage tolerance, absorption, metabolism, distribution and excretion. In the case of some products for severe or life-threatening diseases, such as cancer, especially when the product may be too inherently toxic to ethically administer to healthy volunteers, the initial human testing is often conducted in patients.
- Phase 2: This phase involves clinical trials in a limited patient population to identify possible adverse effects and safety risks, to preliminarily evaluate the efficacy of the product for specific targeted diseases and to determine dosage tolerance and optimal dosage.

- Phase 3: Clinical trials are undertaken to further evaluate dosage, clinical efficacy and safety in an expanded patient population at geographically dispersed clinical study sites. These clinical trials are intended to establish the overall risk benefit ratio of the product candidate and provide, if appropriate, an adequate basis for product labeling.

Post-approval trials, sometimes referred to as Phase 4, may be conducted after initial marketing approval. These trials are used to gain additional experience from the treatment of patients in the intended therapeutic indication. In certain instances, the FDA may mandate the performance of Phase 4 clinical trials as a condition of approval of a BLA.

The FDA or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the research subjects or patients are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the drug has been associated with unexpected serious harm to patients. Additionally, some clinical trials are overseen by an independent group of qualified experts organized by the sponsor, known as a data safety monitoring board or committee. Depending on its charter, this group may determine whether a trial may move forward at designated check points based on access to certain data from the trial. Phase 1, Phase 2, and Phase 3 testing may not be completed successfully within any specified period, if at all.

During the development of a new drug, sponsors are given opportunities to meet with the FDA at certain points. These points may be prior to submission of an IND, at the end of Phase 2, and before a BLA is submitted. Meetings at other times may be requested. These meetings can provide an opportunity for the sponsor to share information about the data gathered to date, for the FDA to provide advice, and for the sponsor and FDA to reach agreement on the next phase of development. Sponsors typically use the end of Phase 2 meeting to discuss their Phase 2 clinical results and present their plans for the pivotal Phase 3 clinical trial that they believe will support approval of the new drug. If this type of discussion occurs, a sponsor may be able to request a Special Protocol Assessment (SPA), the purpose of which is to reach agreement with the FDA on the design of the Phase 3 clinical trial protocol design and analysis that will form the primary basis of an efficacy claim.

According to FDA guidance for industry on the SPA process, a sponsor that meets the prerequisites may make a specific request for a special protocol assessment and provide information regarding the design and size of the proposed clinical trial. The FDA is required to evaluate the protocol within 45 days of the request to assess whether the proposed trial is adequate, and that evaluation may result in discussions and a request for additional information. An SPA request must be made before the proposed trial begins, and all open issues must be resolved before the trial begins. If a written agreement is reached, it will be documented and made part of the record. The agreement will be binding on the FDA and may not be changed by the sponsor or the FDA after the trial begins except with the written agreement of the sponsor and the FDA or if the FDA determines that a substantial scientific issue essential to determining the safety or efficacy of the drug was identified after the testing began. If the sponsor makes any unilateral changes to the approved protocol, the agreement will be invalidated.

Concurrent with clinical trials, companies usually complete additional animal studies and must also develop additional information about the chemistry and physical characteristics of the drug and finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things the manufacturer must develop methods for testing the identity, strength, quality and purity of the final drug. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

While the IND is active and before approval, progress reports summarizing the results of the clinical trials and nonclinical studies performed since the last progress report must be submitted at least annually to the FDA, and written IND safety reports must be submitted to the FDA and investigators for serious and unexpected suspected adverse events, findings from other studies suggesting a significant risk to humans exposed to the same or similar drugs, findings from animal or in vitro testing suggesting a significant risk to humans, and any clinically important increased incidence of a serious suspected adverse reaction compared to that listed in the protocol or investigator brochure.

There are also requirements governing the reporting of ongoing clinical trials and completed trial results to public registries. Sponsors of certain clinical trials of FDA-regulated products are required to register and disclose specified clinical trial information, which is publicly available at www.clinicaltrials.gov. Information related to the product, patient population, phase of investigation, trial sites and investigators and other aspects of the clinical trial is then made public as part of the registration. Sponsors are also obligated to discuss the results of their clinical trials after completion. Disclosure of the results of these trials can be delayed until the new product or new indication being studied has been approved. However, there are evolving rules and increasing requirements for publication of all trial related information, and it is possible that data and other information from trials involving drugs that never garner approval could require disclosure in the future.

U.S. Review and Approval Processes

The results of product development, preclinical and other nonclinical studies and clinical trials, along with descriptions of the manufacturing process, analytical tests conducted on the chemistry of the drug, proposed labeling, and other relevant information are submitted to the FDA as part of a BLA requesting approval to market the product. The submission of a BLA is subject to the payment of a significant user fee; although a waiver of such fee may be obtained under certain limited circumstances, including where the biologic has been designated as an orphan drug. The FDA reviews all BLAs submitted to ensure that they are sufficiently complete for substantive review before it accepts them for filing. The FDA may request additional information rather than accept a BLA for filing. In this event, the BLA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in depth substantive review. FDA may refer the BLA to an advisory committee for review, evaluation and recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendation of an advisory committee, but it generally follows such recommendations. The approval process is lengthy and often difficult, and the FDA may refuse to approve a BLA if the applicable regulatory criteria are not satisfied or may require additional clinical or other data and information. Even if such data and information is submitted, the FDA may ultimately decide that the BLA does not satisfy the criteria for approval. Data obtained from clinical trials are not always conclusive and the FDA may interpret data differently than we interpret the same data. The FDA may issue a complete response letter, which may require additional clinical or other data or impose other conditions that must be met in order to secure final approval of the BLA, or an approval letter following satisfactory completion of all aspects of the review process. The FDA reviews a BLA to determine, among other things whether the product is safe, pure and potent and the facility in which it is manufactured, processed, packed or held meets standards designed to assure the product's continued safety, purity and potency. Before approving a BLA, the FDA will inspect the facility or facilities where the product is manufactured.

BLAs receive either standard or priority review. A drug representing a significant improvement in treatment, prevention or diagnosis of disease may receive priority review. Priority review for an original BLA will be six months from the date that the BLA is filed. In addition, products studied for their safety and effectiveness in treating serious or life threatening illnesses and that provide meaningful therapeutic benefit over existing treatments may receive accelerated approval and may be approved on the basis of adequate and well controlled clinical trials establishing that the drug product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit or on the basis of an effect on a clinical endpoint other than survival or irreversible morbidity. As a condition of approval, the FDA may require that a sponsor of a drug receiving accelerated approval perform adequate and well controlled Phase 4 clinical trials. Priority review and accelerated approval do not change the standards for approval, but may expedite the approval process.

After the FDA evaluates a BLA, it will issue an approval letter or a Complete Response Letter (CRL). An approval letter authorizes commercial marketing of the drug with prescribing information for specific indications. A CRL indicates that the review cycle of the application is complete and the application will not be approved in its present form. A CRL usually describes the specific deficiencies in the BLA identified by the FDA and may require additional clinical data, such as an additional pivotal Phase 3 trial or other significant and time-consuming requirements related to clinical trials, nonclinical studies or manufacturing. If a CRL is issued, the sponsor must resubmit the BLA, addressing all of the deficiencies identified in the letter, or withdraw the application. Even if such data and information are submitted, the FDA may decide that the BLA does not satisfy the criteria for approval.

If a product receives regulatory approval, the approval may be significantly limited to specific diseases and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product. In addition, the FDA may require a sponsor to conduct Phase 4 testing which involves clinical trials designed to further assess a drug's safety and effectiveness after BLA approval and may require testing and surveillance programs to monitor the safety of approved products which have been commercialized. The FDA may also place other conditions on approval including the requirement for a Risk Evaluation and Mitigation Strategy (REMS), to assure the safe use of the drug. If the FDA concludes a REMS is needed, the sponsor of the BLA must submit a proposed REMS. The FDA will not approve the BLA without an approved REMS, if required. A REMS could include medication guides, physician communication plans or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. Any of these limitations on approval or marketing could restrict the commercial promotion, distribution, prescription or dispensing of products. Marketing approval may be withdrawn for non-compliance with regulatory requirements or if problems occur following initial marketing.

The Pediatric Research Equity Act (PREA), requires a sponsor to conduct pediatric clinical trials for most drugs and biologics, for a new active ingredient, new indication, new dosage form, new dosing regimen or new route of administration. Under PREA, original BLAs and supplements thereto, must contain a pediatric assessment unless the sponsor has received a deferral or waiver. The required assessment must evaluate the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations and support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The sponsor or FDA may request a deferral of pediatric clinical trials for some or all of the pediatric subpopulations. A deferral may be granted for several reasons, including a finding that the drug or biologic is ready for approval for use in adults before pediatric clinical

trials are complete or that additional safety or effectiveness data needs to be collected before the pediatric clinical trials begin. Orphan indications are exempt from PREA. The FDA must send a non-compliance letter to any sponsor that fails to submit the required assessment, keep a deferral current or fails to submit a request for approval of a pediatric formulation.

Patent Term Restoration and Marketing Exclusivity

Depending upon the timing, duration and specifics of FDA approval of our drugs, some of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984 (referred to as the Hatch Waxman Amendments). The Hatch Waxman Amendments permit a patent restoration term of up to five years as compensation for patent term lost during product development and the FDA regulatory review process. However, patent term restoration cannot extend the remaining term of a patent beyond a total of 14 years from the product's approval date. The patent term restoration period is generally one half the time between the effective date of an IND, and the submission date of a BLA, plus the time between the submission date of a BLA and the approval of that application. Only one patent applicable to an approved drug is eligible for the extension, and the extension must be applied for prior to expiration of the patent. The U.S. Patent and Trademark Office, in consultation with the FDA, reviews and approves the application for any patent term extension or restoration. In the future, we intend to apply for restorations of patent term for some of its currently-owned or licensed patents to add patent life beyond their current expiration date, depending on the expected length of clinical trials and other factors involved in the filing of the relevant NDA.

Pediatric exclusivity is a type of marketing exclusivity available in the United States. Under the Best Pharmaceuticals for Children Act (the BPCA), an additional six months of marketing exclusivity may be available if a sponsor conducts clinical trials in children in response to a written request from the FDA. If a written request does not include clinical trials in neonates, the FDA is required to include its rationale for not requesting those clinical trials. The FDA may request studies on approved or unapproved indications in separate written requests. The issuance of a written request does not require the sponsor to undertake the described clinical trials. To date, we have not received any written requests.

Biologics Price Competition and Innovation Act of 2009

The ACA, which included the BPCIA, amended the PHSA to create an abbreviated approval pathway for two types of "generic" biologics, biosimilars and interchangeable biologic products, and provides for a 12-year data exclusivity period for the first approved biological product, or reference product, against which a biosimilar or interchangeable application is evaluated; however if pediatric clinical trials are performed and accepted by the FDA, the 12-year data exclusivity period will be extended for an additional six months. Because our product candidates will be regulated as biologics, if they are approved they may be subject to competition from biosimilars. A biosimilar product is defined as one that is highly similar to a reference product notwithstanding minor differences in clinically-inactive components and for which there are no clinically meaningful differences between the biological product and the reference product in terms of the safety, purity and potency of the product. An interchangeable product is a biosimilar product that may be substituted for the reference product without the intervention of the health care provider who prescribed the reference product.

The biosimilar applicant must demonstrate that the product is biosimilar based on data from (1) analytical studies showing that the biosimilar product is highly similar to the reference product; (2) animal studies (including toxicity); and (3) one or more clinical trials to demonstrate safety, purity and potency in one or more appropriate conditions of use for which the reference product is approved. In addition, the applicant must show that the biosimilar and reference products have the same mechanism of action for the conditions of use on the label, route of administration, dosage and strength, and the production facility must meet standards designed to assure product safety, purity and potency.

An application for a biosimilar product may not be submitted until four years after the date on which the reference product was first approved. The first approved interchangeable biologic product will be granted an exclusivity period of up to one year after it is first commercially marketed, but the exclusivity period may be shortened under certain circumstances.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan drug designation to a drug intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States, or more than 200,000 individuals in the United States and for which there is no reasonable expectation that the cost of developing and making available in the United States a drug for this type of disease or condition will be recovered from sales in the United States for that drug. Orphan drug designation must be requested before submitting a BLA. After the FDA grants orphan drug designation, the identity of the therapeutic agent and its potential orphan use will be disclosed publicly by the FDA; the posting will also indicate whether a drug is no longer designated as an orphan drug. More than one product candidate may receive an orphan drug designation for the same indication. Orphan drug designation does not convey any advantage in or shorten the duration of the regulatory review and approval process.

If a product that has orphan drug designation subsequently receives the first FDA approval for the disease for which it has such designation, the product is entitled to seven years of orphan product exclusivity, except in very limited circumstances. The FDA will not recognize orphan drug exclusive approval if a sponsor fails to demonstrate upon approval that the drug is clinically superior to a previously approved drug, regardless of whether or not the approved drug was designated an orphan drug or had orphan drug exclusivity. Thus orphan drug exclusivity could also block the approval of one of our products for seven years if a competitor obtains approval of the same drug as defined by the FDA and we are not able to show the clinical superiority of our drug or if our product candidate is determined to be contained within the competitor's product for the same indication or disease.

In August 2016, the FDA granted orphan drug designation for SYNB1020 for the treatment of UCDs. In October 2017, the FDA granted SYNB1618 orphan drug designation for the treatment of PKU. Orphan drug designation will provide us with seven years of market exclusivity that begins when the BLA for the drug receives FDA marketing approval for the use for which the orphan drug status was granted.

Expedited Review and Approval

The FDA has various programs, including Fast-Track, priority review, and accelerated approval, which are intended to expedite or simplify the process for reviewing drugs, and/or provide for approval on the basis of surrogate endpoints. Even if a drug qualifies for one or more of these programs, the FDA may later decide that the drug no longer meets the conditions for qualification or that the time period for FDA review or approval will not be shortened. Generally, drugs that may be eligible for these programs are those for serious or life-threatening conditions, those with the potential to address unmet medical needs, and those that offer meaningful benefits over existing treatments. For example, Fast-Track is a process designed to facilitate the development, and expedite the review, of drugs to treat serious diseases and fill an unmet medical need. The request may be made at the time of IND submission and generally no later than the pre-BLA meeting. The FDA will respond within 60 calendar days of receipt of the request. Priority review, which is requested at the time of BLA submission, is designed to give drugs that offer major advances in treatment or provide a treatment where no adequate therapy exists an initial review within six months as compared to a standard review time of 10 months. Although Fast-Track and priority review do not affect the standards for approval, the FDA will attempt to facilitate early and frequent meetings with a sponsor of a Fast-Track designated drug and expedite review of the application for a drug designated for priority review. Accelerated approval provides an earlier approval of drugs that treat serious diseases, and that fill an unmet medical need based on a surrogate endpoint, which is a laboratory measurement or physical sign used as an indirect or substitute measurement representing a clinically meaningful outcome. Discussions with the FDA about the feasibility of an accelerated approval typically begin early in the development of the drug in order to identify, among other things, an appropriate endpoint. As a condition of approval, the FDA may require a sponsor of a drug receiving accelerated approval to perform post-marketing clinical trials to confirm the appropriateness of the surrogate marker trial.

A Breakthrough Therapy designation is designed to expedite the development and review of drugs that are intended to treat a serious condition where preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over available therapy on a clinically significant endpoint. A sponsor may request Breakthrough Therapy designation at the time that the IND is submitted, or no later than at the end of Phase 2 meeting. The FDA will respond to a Breakthrough Therapy designation request within 60 days of receipt of the request. A drug that receives Breakthrough Therapy designation is eligible for all Fast-Track designation features, intensive guidance on an efficient drug development program, beginning as early as Phase 1 and commitment from the FDA involving senior managers.

In June 2017, the FDA granted Fast-Track designation for the use of SYNB1020 for the treatment of UCDs.

Post-Approval Requirements

Once an approval is granted, the FDA may withdraw the approval if compliance with regulatory standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product may result in restrictions on the product or even complete withdrawal of the product from the market. After approval, some types of changes to the approved product, such as adding new indications, certain manufacturing changes and additional labeling claims, are subject to further FDA review and approval. Drug manufacturers and other entities involved in the manufacture and distribution of approved drugs are required to register their establishments with the FDA and certain state agencies and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP and other laws and regulations. We rely, and expect to continue to rely, on third parties for the production of clinical and commercial quantities of our products. Future inspections by the FDA and other regulatory agencies may identify compliance issues at the facilities of our contract manufacturers that may disrupt production or distribution or require substantial resources to correct.

Any drug products manufactured or distributed by us or our partners pursuant to FDA approvals are subject to continuing regulation by the FDA, including, among other things, record keeping requirements, reporting of adverse experiences with the drug, providing the FDA with updated safety and efficacy information, drug sampling and distribution requirements, complying with certain electronic records and signature requirements, and complying with FDA promotion and advertising requirements. FDA strictly regulates labeling, advertising, promotion and other types of information on products that are placed on the market. Drugs may be promoted only for the approved indications and in accordance with the provisions of the approved label.

From time-to-time, legislation is drafted, introduced and passed in Congress that could significantly change the statutory provisions governing the approval, manufacturing and marketing of products regulated by the FDA. It is impossible to predict whether further legislative changes will be enacted, or FDA regulations, guidance or interpretations changed or what the impact of such changes, if any, may be.

Foreign Regulation

In addition to regulations in the United States, we will be subject to a variety of foreign regulations governing clinical trials and commercial sales and distribution of our products. Whether or not we obtain FDA approval for a product, we must obtain approval by the comparable regulatory authorities of foreign countries or economic areas, such as the European Union, before we may commence clinical trials or market products in those countries or areas. The approval process and requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from place to place, and the time may be longer or shorter than that required for FDA approval.

Under European Union regulatory systems, a company may submit marketing authorization applications either under a centralized or decentralized procedure. The centralized procedure, which is compulsory for medicinal products produced by biotechnology or those medicinal products containing new active substances for specific indications such as the treatment of AIDS, cancer, neurodegenerative disorders, diabetes, viral diseases and designated orphan medicines, and optional for other medicines which are highly innovative. Under the centralized procedure, a marketing application is submitted to the European Medicines Agency where it will be evaluated by the Committee for Medicinal Products for Human Use and a favorable opinion typically results in the grant by the European Commission of a single marketing authorization that is valid for all European Union member states within 67 days of receipt of the opinion. The initial marketing authorization is valid for five years, but once renewed is usually valid for an unlimited period. The decentralized procedure provides for approval by one or more "concerned" member states based on an assessment of an application performed by one member state, known as the "reference" member state. Under the decentralized approval procedure, an applicant submits an application, or dossier, and related materials to the reference member state and concerned member states. The reference member state prepares a draft assessment and drafts of the related materials within 120 days after receipt of a valid application. Within 90 days of receiving the reference member state's assessment report, each concerned member state must decide whether to approve the assessment report and related materials. If a member state does not recognize the marketing authorization, the disputed points are eventually referred to the European Commission, whose decision is binding on all member states.

As in the United States, we may apply for designation of a product as an orphan drug for the treatment of a specific indication in the European Union before the application for marketing authorization is made. Orphan drugs in Europe enjoy economic and marketing benefits, including up to 10 years of market exclusivity for the approved indication unless another applicant can show that its product is safer, more effective or otherwise clinically superior to the orphan designated product.

Reimbursement

Sales of pharmaceutical products depend in significant part on the availability of third party reimbursement. Third party payors include government healthcare programs such as Medicare, managed care providers, private health insurers and other organizations. We anticipate third party payors will provide reimbursement for our products. However, these third party payors are increasingly challenging the price and examining the cost effectiveness of medical products and services. In addition, significant uncertainty exists as to the reimbursement status of newly-approved healthcare products. We may need to conduct expensive pharmacoeconomic studies in order to demonstrate the cost effectiveness of our products. Our product candidates may not be considered cost effective. It is time consuming and expensive for us to seek reimbursement from third party payors. Reimbursement may not be available or sufficient to allow us to sell our products on a competitive and profitable basis.

Medicare is a federal healthcare program administered by the federal government that covers individuals age 65 and over as well as individuals with certain disabilities. Drugs may be covered under one or more sections of Medicare depending on the nature of the drug and the conditions associated with and site of administration. For example, under Part D, Medicare beneficiaries may enroll in prescription drug plans offered by private entities which provide coverage for outpatient prescription drugs. Part D plans include both stand-alone prescription drug benefit plans and prescription drug coverage as a supplement to Medicare Advantage plans. Unlike Medicare Parts A and B, Part D coverage is not standardized. Part D prescription drug plan sponsors are not required to pay for all covered Part D drugs, and each drug plan can develop its own drug formulary that identifies which drugs it will cover and at what tier or level.

Medicare Part B covers most injectable drugs given in an in-patient setting and some drugs administered by a licensed medical provider in hospital outpatient departments and doctors' offices. Medicare Part B is administered by Medicare Administrative Contractors, which generally have the responsibility of making coverage decisions. Subject to certain payment adjustments and limits, Medicare generally pays for a Part B-covered drug based on a percentage of manufacturer-reported average sales price, which is regularly updated. We believe that our product candidates that are intended to be administered intratumorally will be subject to the Medicare Part B rules.

We expect that there will continue to be a number of federal and state proposals to implement governmental pricing controls and limit the growth of healthcare costs, including the cost of prescription drugs. For example, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act of 2010 (collectively, ACA) enacted in March 2010, was expected to have a significant impact on the health care industry. The ACA has been under scrutiny by the U.S. Congress almost since its passage, and certain sections of the ACA have not been fully implemented or effectively repealed. As a result, its longevity continues to be uncertain. In addition, ongoing initiatives in the U.S. have increased and will continue to increase pressure on drug pricing. The announcement or adoption of any such initiative could have an adverse effect on potential revenues from any product candidate that we may successfully develop.

In addition, in some foreign countries, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the European Union provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on our profitability placing the medicinal product on the market. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our products. Historically, products launched in the European Union do not follow price structures of the United States and generally tend to be significantly lower.

Other Regulatory Matters

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. These operations may involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations may also produce hazardous waste products. We contract with third parties for the disposal of these materials and wastes.

Manufacturing

We have made and continue to make significant investments to develop manufacturing processes designed to allow it to reproducibly manufacture high quality living medicines at clinical scale and, later, at commercial scale to enable approval of our product candidates. We have a small-scale internal development group to support discovery and preclinical research and are building the organization to support scale-up and development towards commercialization. We currently work with contract manufacturing organizations (CMOs) for clinical material and formulation development work.

We have successfully transferred our manufacturing process for our lead hyperammonemia and our PKU programs to a CMO where it was used to manufacture Phase 1 clinical material pursuant to FDA's cGMP requirements.

These first clinical materials use a liquid formulation. We are investing in the development of a solid dose oral formulation (tablets, capsules, or sachets) for later stage clinical development and commercial use.

To enable the production of high levels of cells, or biomass, we can engineer our Synthetic Biotic medicines with switches. These switches are comprised of transcription factor and promoter pairs that allow for controlled expression of the therapeutic effectors produced by our Synthetic Biotic medicines. To ensure the metabolic capacity of the cells is allotted to the production of a high level of biomass during manufacturing, the effector circuits in the Synthetic Biotic programs are not expressed during this growth phase. At the end of the manufacturing process, the circuits are then induced, or activated. This two-step approach was designed to enable a high level of biomass production as well as to deliver the required activity necessary at the time of administration.

As we progress in clinical development, we will need to scale up from Phase 1 clinical-scale to commercial-scale manufacturing. We are in the process of assessing CMOs who meet our criteria to supply our later-stage clinical development and commercial supply. We plan to compare the merits of working with one or more CMOs who meet our criteria with the possibility of building cGMP manufacturing capacity and capabilities internally.

Competition

The biotechnology industry is extremely competitive in the race to develop new products. While we believe we have significant competitive advantages with our industry-leading expertise in synthetic biology and metabolic engineering of probiotic bacteria, our clinical development expertise, and strong intellectual property position, we currently face and will continue to face competition for our development programs from companies that use synthetic biology or cell therapy development platforms and from companies focused on more conventional therapeutic modalities such as small molecules and antibodies. The competition is likely to come from multiple sources, including larger pharmaceutical companies, biotechnology companies and academia. Many of these competitors may have access to greater capital and resources than us. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel, in establishing clinical trial sites and patient registration for clinical trials, and in accessing technologies to enable our programs. For any products that we may ultimately commercialize, not only will we compete with any existing therapies and those therapies currently in development, but we will also have to compete with new therapies that may become available in the future.

Competitors to our efforts to provide living medicines to patients with a wide range of indications include other synthetic biology companies developing other synthetic biology methods, cellular and microbiome-based companies, DNA and RNA-based companies, as well as companies developing small molecules or other biologics. In the case of indications that we are targeting with our own Synthetic Biotic medicines, competitors include, but are not limited to:

- *UCD*
  - Horizon Pharma plc has a licensed product; and
  - Dimension Therapeutics, Inc. (acquired by Ultragenyx Pharmaceutical Inc.), Aeglea Biotherapeutics, Inc., Arcturus Therapeutics Inc., Translate Bio (formerly RaNA Therapeutics) and Selecta Biosciences, Inc. are each involved with discovery or pre-clinical stage product candidates.
- *HE*
  - Valeant Pharmaceuticals International, Inc. has a licensed product; and
  - Ocera Therapeutics, Inc. (acquired by Mallinckrodt Pharmaceuticals), Umecrine Cognition AB, Rebiotix, Inc. and Salix Pharmaceuticals, Ltd, as well as other pre-clinical and discovery stage companies are each developing product candidates.
- *PKU*
  - BioMarin, Inc. has a licensed and a development stage product; and
  - MipSalus ApS, Codexis, Inc., Dimension Therapeutics, Inc. (acquired by Ultragenyx Pharmaceutical Inc.) Homology Medicines, Inc., Rubius Therapeutics and Synthetic Biologics, Inc. are each developing product candidates.
- *IO*
  - The field of immuno-oncology is highly competitive with many companies developing and commercializing a wide range of types of pharmaceutical products and combinations. Examples include companies such as Merck and Bristol Myers Squibb that develop and market antibodies called checkpoint inhibitors. Celgene and Gilead market autologous cell-based therapies called CAR-T. Other companies are developing and or marketing oncolytic viruses, cancer vaccines, cytotoxic agents, and other approaches to treating cancer.

Our Team: Executives, Founders and Scientific Advisors

Our team of executives has proven track records of successfully translating scientific visions into successful commercial therapeutic products, solving complex issues in developing novel therapeutics and progressing new and novel products through regulatory approval. Our scientific founders, Timothy Lu, M.D., Ph.D., and James Collins, Ph.D., are experts in the emerging field of synthetic biology. In addition to our management team and founders, we have established advisory relationships with researchers and clinicians dedicated to the development of Synthetic Biotic therapeutic products for patients with significant unmet medical needs and whose expertise spans synthetic biology, metabolic engineering, metabolism, immuno-modulation and immuno-oncology arenas. Our scientific advisors include Dr. Lu and Dr. Collins; Christopher Voigt, Ph.D., Cammie Lesser, M.D., Ph.D. and Kristala Prather, Ph.D., experts in synthetic biology and bacterial metabolism; and Charles Mackay, Ph.D., Ulrich von Andrian, M.D., Ph.D. and Sangeeta Bhatia, M.D., Ph.D., experts in immunomodulation and oncology. We intend to expand our advisory boards as we grow. All of our founders and advisors are equity holders in us and receive compensation as scientific advisors. Although they are regularly available

for scientific consultation, our arrangements with these individuals do not entitle us to any of their existing or future intellectual property derived from their independent research or research with other third parties.

Employees

As of March 1, 2018, we had 63 full-time employees. Of our full-time employees, 47 were primarily engaged in research and development activities. None of our employees are subject to a collective bargaining agreement. We believe that we have good relations with our employees.

Corporate Information and History

We were originally incorporated in the State of Delaware in December 2007 under the name "Mirna Therapeutics, Inc." We carry on our business directly and through our subsidiaries.

Our subsidiary, Synlogic Operating Company, Inc. was incorporated in Delaware as TMC Therapeutics, Inc. on March 14, 2014. On July 15, 2014, TMC Therapeutics, Inc. changed its name to Synlogic, Inc. (Private Synlogic when referred to prior to the Merger (as defined below)). On July 2, 2015, the common and preferred shareholders of Private Synlogic executed the Synlogic, LLC Contribution Agreement, pursuant to which such common and preferred shareholders contributed such shareholders' equity interests in Private Synlogic in exchange for common and preferred units in a newly formed parent company named Synlogic, LLC (the 2015 Reorganization). In addition, IBDCo was formed as a subsidiary of Synlogic, LLC, as part of the 2015 Reorganization, and we entered into a license, option and merger agreement with AbbVie for the development of treatments for IBD. In May 2017, we completed a series of transactions pursuant to which Synlogic, LLC merged with and into Private Synlogic with Private Synlogic continuing as the surviving corporation.

On August 28, 2017, Synlogic, Inc., formerly known as Mirna Therapeutics, Inc. (NASDAQ: MIRN) (Mirna), completed its business combination with Synlogic, Inc. in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated as of May 15, 2017, by and among Mirna, Meerkat Merger Sub, Inc. (Merger Sub), and Private Synlogic (the Merger Agreement), pursuant to which Merger Sub merged with and into Private Synlogic, with Private Synlogic surviving as a wholly owned subsidiary of Mirna (the Merger). On August 25, 2017, in connection with, and prior to the completion of, the Merger, Mirna effected a 1:7 reverse stock split of its common stock (the Reverse Stock Split), and on August 28, 2017, immediately after completion of the Merger, Mirna changed its name to "Synlogic, Inc." (NASDAQ: SYBX).

Under the terms of the Merger Agreement, Mirna issued shares of its common stock to Private Synlogic's stockholders, at an exchange ratio of 0.5532 shares of Mirna's common stock, after taking into account the Reverse Stock Split, for each share of Private Synlogic common stock and preferred stock outstanding immediately prior to the Merger (Exchange Ratio). The Exchange Ratio was determined through arms'-length negotiations between Mirna and Private Synlogic. Mirna assumed all of the stock options outstanding under the Synlogic 2017 Stock Incentive Plan (2017 Plan), with such stock options henceforth representing the right to purchase a number of shares of Mirna's common stock equal to 0.5532 multiplied by the number of shares of Private Synlogic common stock previously represented by such options. Mirna also assumed the 2017 Plan.

Immediately after the Merger, there were 16,282,496 shares of our common stock outstanding. At this time, the former stockholders and optionholders of Private Synlogic owned, or held rights to acquire, approximately 82.4% of our fully-diluted common stock, which for these purposes is defined as our outstanding common stock , plus "in the money" options, assuming that all "in the money" options outstanding immediately prior to the Merger were exercised on a cashless basis immediately prior to the closing of the Merger (the Fully-Diluted Common Stock), with Mirna's stockholders and optionholders immediately prior to the Merger owning approximately 17.6% of our Fully-Diluted Common Stock.

Item 1A. Risk Factors.

Investing in our common stock involves a high degree of risk. Our business, prospects, financial condition or operating results could be materially adversely affected by the risks identified below, as well as other risks not currently known to us or that we currently consider immaterial. The trading price of our common stock could decline due to any of these risks, and you may lose all or part of your investment. Before deciding whether to invest in our common stock, you should consider carefully the risk factors discussed below. The following risk factors may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future.

Risks Related to Our Financial Condition, Capital Requirements and Operating Results

We are a clinical-stage biopharmaceutical company with a history of losses, and we expect to continue to incur losses for the foreseeable future, and we may never achieve or maintain profitability.

We are a clinical-stage biopharmaceutical company focused on the development of Synthetic Biotics and we have incurred significant operating losses since our inception in 2014. Our net loss was approximately $40.4 million and $21.0 million for the fiscal years ended December 31, 2017 and 2016, respectively. As of December 31, 2017, we had an accumulated deficit of approximately $71.7 million. To date, we have not generated any product revenue. Substantially all of our losses have resulted from expenses incurred in connection with our research and development programs and from general and administrative costs associated with our operations. We have no products on the market and expect that it will be many years, if ever, before we have a product candidate ready for commercialization.

We have not generated, and do not expect to generate, any product revenue for the foreseeable future, and we expect to continue to incur significant operating losses for the foreseeable future due to the cost of research and development, preclinical studies and clinical trials, the regulatory review process for product candidates, and the development of manufacturing and marketing capabilities for any product candidates approved for commercial sale. The amount of our potential future losses is uncertain. To achieve profitability, we must successfully develop product candidates, obtain regulatory approvals to market and commercialize product candidates, manufacture any approved product candidates on commercially reasonable terms, establish a sales and marketing organization or suitable third-party alternatives for any approved product candidates and raise sufficient funds to finance our business activities. We may never succeed in these activities and, even if we do, may never generate revenues that are significant or large enough to achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would decrease our value and could impair our ability to raise capital, maintain our research and development efforts, expand our business or continue our operations. A decline in our value could also cause our stockholders to lose all or part of their investment.

We will require substantial additional funding, which may not be available on acceptable terms, or at all.

We have used substantial funds to discover and develop our programs and proprietary drug development platform and will require substantial additional funds to conduct further research and development, including preclinical studies and clinical trials of our product candidates, seek regulatory approvals for our product candidates and manufacture and market any products that are approved for commercial sale. Our future capital requirements and the period for which we expect our existing resources to support our operations may vary significantly from what we expect. Our monthly spending levels vary based on new and ongoing research and development and corporate activities. Because we cannot be certain of the length of time or activities associated with successful development and commercialization of our product candidates, we are unable to estimate the actual funds we will require to develop and commercialize them.

We do not expect to realize any appreciable revenue from product sales or royalties in the foreseeable future, if at all. Our revenue sources will remain very limited unless and until our product candidates complete clinical development and are approved for commercialization and successfully marketed. To date, we have primarily financed our operations through sales of our securities, our third-party collaborations and our Merger with Mirna. We intend to seek additional funding in the future through collaborations, equity or debt financings, credit or loan facilities or a combination of one or more of these financing sources. Our ability to raise additional funds will depend on financial, economic and other factors, many of which are beyond our control. Additional funds may not be available to us on acceptable terms or at all. If we raise additional funds by issuing equity or convertible debt securities, our stockholders will suffer dilution and the terms of any financing may adversely affect the rights of our stockholders. In addition, as a condition to providing additional funds to us, future investors may demand, and may be granted, rights superior to those of existing stockholders. Debt financing, if available, may involve restrictive covenants limiting our flexibility in conducting future business activities, and, in the event of insolvency, debt holders would be repaid before holders of equity securities received any distribution of corporate assets.

If we are unable to obtain funding on a timely basis or on acceptable terms, or at all, we may have to delay, limit or terminate our research and development programs and preclinical studies or clinical trials, if any, limit strategic opportunities or undergo reductions in our workforce or other corporate restructuring activities. We also could be required to seek funds through arrangements with collaborators or others that may require us to relinquish rights to some of our product candidates or technologies that we would otherwise pursue on our own.

Our quarterly and annual operating results may fluctuate in the future. As a result, we may fail to meet the expectations of research analysts or investors, which could cause our stock price to decline.

Our financial condition and operating results may fluctuate from quarter to quarter and year to year in the future due to a variety of factors, many of which are beyond our control. Factors relating to our business that may contribute to these fluctuations include the following factors, as well as factors described elsewhere in this prospectus supplement and others:

- our ability to achieve or maintain profitability;
- our ability to develop and maintain Synthetic Biotic technologies;
- our ability to manage our growth;
- the outcomes of research programs, clinical trials, or other product development and approval processes;
- our ability to accurately report our financial results in a timely manner;
- our dependence on, and the need to attract and retain, key management and other personnel;
- our ability to obtain, protect and enforce our intellectual property rights;
- our ability to prevent the theft or misappropriation of our intellectual property, know-how or technologies;
- potential advantages that our competitors and potential competitors may have in securing funding or developing competing technologies or products; and
- our ability to obtain additional capital that may be necessary to expand our business.

Due to the various factors mentioned above, and others, the results of any prior quarterly or annual periods should not be relied upon as indications of our future operating performance.

Our stock price is volatile and our stockholders may not be able to resell shares of our common stock at or above the price they paid.

The trading price of our common stock is highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control, such as reports by industry analysts, investor perceptions or negative announcements by other companies involving similar technologies or diseases. These factors also include those discussed in this "Risk Factors" section of this Annual Report on Form 10-K and others such as:

- announcements relating to collaborations that we may enter into with respect to the development or commercialization of our product candidates;
- announcements relating to the receipt, modification or termination of government contracts or grants;
- termination or delay of a development program;
- product liability claims related to our clinical trials or product candidates;
- prevailing economic conditions;
- additions or departures of key personnel;
- business disruptions caused by earthquakes or other natural disasters;
- disputes concerning our intellectual property or other proprietary rights;
- FDA or other U.S. or foreign regulatory actions affecting us or our industry;
- sales of our common stock by the company, our executive officers and directors or our stockholders in the future;
- future sales or issuances of equity or debt securities by us;

- lack of an active, liquid and orderly market in our common stock;
- fluctuations in our quarterly operating results; and
- the issuance of new or changed securities analysts' reports or recommendations regarding us.

In addition, the stock markets in general, and the markets for pharmaceutical, biopharmaceutical and biotechnology stocks in particular, have experienced extreme volatility that have been often unrelated to the operating performance of the issuer. These broad market fluctuations may adversely affect the trading price or liquidity of our common stock. In the past, when the market price of a stock has been volatile, holders of that stock have sometimes instituted securities class action litigation against the issuer. If any of our stockholders were to bring such a lawsuit against us, we could incur substantial costs defending the lawsuit and the attention of our management would be diverted from the operation of our business.

Our short operating history may make it difficult for stockholders to evaluate the success of our business to date and to assess our future viability.

We are a clinical-stage biopharmaceutical company with a limited operating history. We commenced active operations in 2014. Our operations to date have been limited to organizing and staffing our company, research and development activities, business planning and raising capital. In June 2017, we initiated a Phase 1 clinical trial with SYNB1020, however all of our other therapeutic programs are still in the preclinical development stage. We will need to transition from a company with a research focus to a company capable of supporting clinical development and commercial activities. In addition, we expect to initiate a Phase 1 / 2a clinical trial of SYNB1618 in the first half of 2018. We have not yet demonstrated our ability to successfully complete large-scale, pivotal clinical trials, obtain marketing approvals, manufacture a commercial-scale product, or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization. Typically, it takes many years to develop one new product candidate from the time it is discovered to the time that it becomes available for treating patients. We may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown factors that may hinder our success in commercializing one or more of our product candidates. Further, drug development is a capital-intensive and highly speculative undertaking that involves a substantial degree of risk. You should consider our prospects in light of the costs, uncertainties, delays and difficulties frequently encountered by companies in the early stages of development and clinical trials. Any forward-looking statements regarding our future prospects, plans or viability may not be as accurate as they may be if we had a longer operating history or a history of successfully developing and commercializing pharmaceutical products.

The recently passed comprehensive tax reform bill could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law the "Tax Cuts and Jobs Act," or TCJA, which significantly reforms the Internal Revenue Code of 1986, as amended, or the Code. The TCJA, among other things, includes changes to U.S. federal tax rates, imposes significant additional limitations on the deductibility of interest and net operating loss carryforwards, allows for the expensing of capital expenditures, and puts into effect the migration from a "worldwide" system of taxation to a territorial system. Our net deferred tax assets and liabilities will be revalued at the newly enacted U.S. corporate rate, and the impact, if any, will be recognized in our tax expense in the year of enactment. We continue to examine the impact this tax reform legislation may have on our business. The impact of this tax reform is uncertain and could be adverse. This annual report does not discuss any such tax legislation or the manner in which it might affect purchasers of our common stock. We urge our investors to consult with their legal and tax advisors with respect to such legislation and the potential tax consequences of investing in our common stock.

Risks Related to the Development of Our Product Candidates

Clinical trials are costly, time consuming and inherently risky, and we may fail to demonstrate safety and efficacy to the satisfaction of applicable regulatory authorities.

Clinical development of a product candidate is expensive, time consuming and involves significant risk. We cannot guarantee that any clinical trials we undertake to conduct will be conducted as planned or completed on schedule or at all. A failure of one or more clinical trials can occur at any stage of development. Events that may prevent successful or timely completion of clinical development of our product candidates include but are not limited to:

- inability to generate satisfactory preclinical or other nonclinical data, including, toxicology, or other in vivo or in vitro data or diagnostics to support the initiation or continuation of clinical trials;
- delays in reaching agreement on acceptable terms with CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and clinical trial sites;
- delays in obtaining required institutional review board approval at each clinical trial site;

- failure to permit the conduct of a clinical trial by regulatory authorities, after review of an investigational new drug or equivalent foreign application or amendment;
- delays in recruiting qualified patients in our clinical trials;
- failure by clinical sites or CROs or other third parties to adhere to clinical trial requirements;
- failure by us, clinical sites, CROs or other third parties to perform in accordance with the good clinical practices requirements of the FDA or applicable foreign regulatory guidelines;
- patients dropping out of the clinical trials;
- occurrence of adverse events, unacceptable side effects or toxicity issues associated with our product candidates;
- imposition by the FDA of a clinical hold or the requirement by other similar regulatory agencies that one or more clinical trials be delayed or halted;
- changes in regulatory requirements and guidance that require amending or submitting new clinical protocols or performing additional nonclinical studies;
- the ultimate affordability of the cost of clinical trials of our product candidates;
- negative or inconclusive results from our clinical trials that may result in us deciding, or regulators requiring us, to conduct additional clinical trials or abandon such clinical trials and/or clinical trials or development programs in other ongoing or planned indications for a product candidate; and
- delays in reaching agreement on acceptable terms with third-party manufacturers or delays or failure in manufacturing sufficient quantities of our product candidates for use in clinical trials.

Any inability to successfully complete clinical development and obtain regulatory approval for our product candidates could result in additional costs to us or impair our ability to generate revenue. In addition, if we make manufacturing or formulation changes to our product candidates, we may need to conduct additional preclinical studies or the results obtained from such new formulation may not be consistent with previous results obtained. Clinical trial delays could also shorten any anticipated periods of patent exclusivity for our product candidates and may allow competitors to develop and bring products to market before we do, which could impair our ability to successfully commercialize our product candidates and may harm our business and results of operations.

The approach we are taking to discover and develop novel therapeutics using synthetic biology to create novel medicines is unproven and may never lead to marketable products.

The scientific discoveries that form the basis for our efforts to generate and develop our product candidates are relatively recent. The scientific evidence to support the feasibility of developing drugs based on our approach is both preliminary and limited. Synthetic Biotics represent a novel therapeutic modality and their successful development by us may require additional studies and efforts to optimize their therapeutic potential. Any product candidates that we develop may not demonstrate in patients the therapeutic properties ascribed to them in laboratory and other preclinical studies, and they may interact with human biological systems in unforeseen, ineffective or even harmful ways. If we are not able to successfully develop and commercialize product candidates based upon this technological approach, we may never become profitable and the value of our capital stock may decline.

Our Synthetic Biotic product candidates are based on a relatively novel technology, which makes it difficult to predict the time and cost of development and of subsequently obtaining regulatory approval, if at all.

We have concentrated our research and development efforts to date on a limited number of product candidates based on our Synthetic Biotic therapeutic platform and identifying our initial targeted disease indications. Our future success depends on our successful development of viable product candidates. There can be no assurance that we will not experience problems or delays in developing our product candidates and that such problems or delays will not cause unanticipated costs, or that any such development problems can be solved.

The clinical trial and manufacturing requirements of the FDA, the European Medicines Agency and other regulatory authorities, and the criteria these regulators use to determine the safety and efficacy of a product candidate, vary substantially according to the type, complexity, novelty and intended use and market of the product candidate. The regulatory approval process for novel product candidates such as Synthetic Biotic therapeutics may be more expensive and take longer than for other, better known or more extensively studied therapeutic modalities. It is difficult to determine how long it will take or how much it will cost to obtain regulatory approvals for our product candidates in either the United States or the European Union or how long it will take to commercialize our product candidates, even if approved for marketing. Approvals by the European Medicines Agency or national

regulatory agencies may not be indicative of what the FDA, and vice versa, may require for approval and different or additional preclinical studies or clinical trials may be required to support regulatory approval in each respective jurisdiction. In addition, the FDA has advised us that the clinical development of SYNB1020 does not require submission to the National Institutes of Health's (NIH) Recombinant DNA Advisory Committee (RAC), a committee that reviews human gene transfer protocols. Nevertheless, if RAC review is deemed necessary by one or more of our clinical trial sites that receives NIH funding, our clinical trials could be delayed. Our product candidates do not involve gene transfers to humans, and we believe that they do not meet any of the criteria for that type of review. Delay or failure to obtain, or unexpected costs in obtaining, the regulatory approval necessary to bring a potential product candidate to market could decrease our ability to generate sufficient product revenue, and our business, financial condition, results of operations and prospects may be harmed.

We may not be successful in our efforts to use and expand our development platform to build a pipeline of product candidates.

A key element of our strategy is to use our targeted focus and experienced management and scientific team to create Synthetic Biotic medicines that can be deployed against a broad range of human disease in order to build a pipeline of product candidates. Although our research and development efforts to date have resulted in potential product candidates, we may not be able to continue to identify and develop additional product candidates. Even if we are successful in continuing to build our pipeline, the potential product candidates that we identify may not be suitable for clinical development. For example, these potential product candidates may be shown to have harmful side effects or other characteristics that indicate that they are unlikely to be drugs that will receive marketing approval and achieve market acceptance. If we do not successfully develop and commercialize product candidates based upon our approach, we will not be able to obtain product revenue in future periods, which likely would result in significant harm to our financial position. There is no assurance that we will be successful in our preclinical and clinical development, and the process of obtaining regulatory approvals will, in any event, require the expenditure of substantial time and financial resources.

Our product candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial viability of an approved label, or result in significant negative consequences following marketing approval, if any.

Undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or terminate our clinical trials or result in a restrictive label or delay regulatory approval by the FDA or comparable foreign authorities. Undesirable side effects and negative results for other indications may negatively impact the development and potential for approval of our product candidates for their proposed indications.

Additionally, even if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects caused by such products, potentially significant negative consequences could result, including but not limited to:

- regulatory authorities may withdraw approvals of or revoke licenses for such products;
- regulatory authorities may require additional warnings on the labels of such products;
- we may be required to create a risk evaluation and mitigation strategy (REMS) plan, which could include a medication guide outlining the risks of such side effects for distribution to patients, a communication plan for healthcare providers, and/or other elements to assure safe use;
- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining market acceptance of a product candidate, even if approved, and could significantly harm our business, results of operations, and prospects.

Our product development program may not uncover all possible adverse events that patients who take our product candidates may experience. The number of subjects exposed to our product candidates during clinical trials and the average exposure time in the clinical development program may be inadequate to detect rare adverse events, or chance findings, that may only be detected once the product is administered to more patients and for greater periods of time.

Clinical trials by their nature utilize a sample of the potential patient population. However, with a limited number of patients and limited duration of exposure, we cannot be fully assured that uncommon or severe side effects of our product candidates will be uncovered. Such side effects may only be uncovered with a significantly larger number of patients exposed to the drug. If such safety problems occur or are identified after a product candidate reaches the market, the FDA may require that we amend the labeling of the product or recall the product, or may even withdraw approval for the product. Any of these events could prevent us from achieving or maintaining market acceptance of a product candidate, even if approved, and could significantly harm our business, results of operations, and prospects.

We are heavily dependent on the success of our product candidates. Some of our product candidates have produced results in preclinical settings to date, but none of our product candidates have completed all required clinical trials, and we cannot give any assurance that we will generate data for any of our product candidates sufficient to receive regulatory approval in our planned indications, which will be required before they can be commercialized.

We have invested substantially all of our efforts and financial resources to identify, acquire and develop our portfolio of product candidates. Our future success is dependent on our ability to successfully further develop, obtain regulatory approval for, and commercialize one or more product candidates. We currently generate no revenue from sales of any products, and we may never be able to develop or commercialize a product candidate.

In addition, none of our product candidates has advanced into any pivotal clinical trial, for our proposed indications and it may be years before any pivotal clinical trials are initiated and completed, if at all. We are not permitted to market or promote any of our product candidates before we receive regulatory approval from the FDA or comparable foreign regulatory authorities, and we may never receive such regulatory approval for any of our product candidates. We cannot be certain that any of our product candidates will be successful in clinical trials or receive regulatory approval. Further, our product candidates may not receive regulatory approval even if they are successful in clinical trials. If we do not receive regulatory approvals for our product candidates, we may not be able to continue our operations.

If we fail to obtain or maintain orphan drug exclusivity for some of our products, our competitors may obtain approval to sell competing drugs to treat the same conditions and our revenues will be reduced.

As part of our business strategy, we have developed and may in the future develop product candidates that may be eligible for FDA and European Commission orphan drug designation. In August 2016, the FDA granted orphan drug designation to SYNB1020 for the treatment of UCD and in October 2017, the FDA granted orphan drug designation to SYNB1618 for the treatment of PKU. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is intended to treat, diagnose or prevent rare diseases or conditions that affect fewer than 200,000 people in the United States. In the EU, orphan drug designation may be granted to drugs intended to treat, diagnose or prevent a life-threatening or chronically debilitating disease having a prevalence of no more than five in 10,000 people in the EU. The company that first obtains FDA approval for a designated orphan drug for the associated rare disease receives marketing exclusivity for use of that drug for the stated condition for a period of seven years. Orphan drug exclusive marketing rights may be lost under several circumstances, including a later determination by the FDA that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantity of the drug. Similar regulations are in effect in the EU with a ten-year period of market exclusivity.

Because the extent and scope of patent protection for some of our product candidates may be limited, obtaining orphan drug designation is especially important for any product candidates that may be eligible for orphan drug designation. For eligible products, we plan to rely on the exclusivity period under the Orphan Drug Act to maintain a competitive position. If we do not obtain orphan drug designation for our product candidates that do not have broad patent protection, our competitors may then seek to sell a competing drug to treat the same condition and our revenues, if any, may be adversely affected thereby.

Even though we have obtained orphan drug designation for certain of our product candidates, and intend to seek orphan drug designation for other product candidates, there is no assurance that we will be the first to obtain marketing approval for any particular rare indication. Further, even though we have obtained orphan drug designation for certain of our product candidates, or even if we obtain orphan drug designation for other potential product candidates, such designation may not effectively protect us from competition because different drugs can be approved for the same condition and the same drug can be approved for different conditions and potentially used off-label in the orphan indication. Even after an orphan drug is approved, the FDA can subsequently approve a competing drug for the same condition for several reasons, including, if the FDA concludes that the later drug is safer or more effective or makes a major contribution to patient care. Orphan drug designation neither shortens the development time or regulatory review time of a drug, nor gives the drug any advantage in the regulatory review or approval process.

Product development involves a lengthy and expensive process with an uncertain outcome, and results of earlier preclinical studies and clinical trials may not be predictive of future clinical trial results.

The results from preclinical studies or early clinical trials of a product candidate may not predict the results that will be obtained in subsequent subjects or in later stage clinical trials of that product candidate or any other product candidate. Flaws in the design of a clinical trial may not become apparent until the clinical trial is well advanced. We have limited experience in designing clinical trials and we may be unable to design and execute clinical trials to support regulatory approval of our product candidates. In addition, preclinical study and clinical trial data are often susceptible to varying interpretations and analyses. Product candidates that seemingly perform satisfactorily in preclinical studies and clinical trials may nonetheless fail to obtain regulatory approval. There is a high failure rate for drugs proceeding through clinical trials. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in clinical development even after achieving promising results in earlier studies, and any such setbacks in our clinical development could negatively affect our business and operating results.

If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary regulatory approvals could be delayed or prevented.

Clinical trials of a new product candidate require the enrollment of a sufficient number of patients suffering from the disease or condition the product candidate is intended to treat and who meet other eligibility criteria. Rates of patient enrollment are affected by many factors, including the size of the potential patient population, the age and condition of the patients, the stage and severity of disease or condition, the nature and requirements of the protocol, the proximity of patients to clinical sites, the availability of effective treatments for the relevant disease or condition, the perceived risks, benefits and convenience of administration of the product candidate being studied, the patient referral practices of physicians, our efforts to facilitate timely enrollment in clinical trials, and the eligibility criteria for the clinical trial. Delays or difficulties in patient enrollment or difficulties retaining trial participants, including as a result of the availability of existing or other investigational treatments, can result in increased costs, longer development times or termination of a clinical trial.

In addition, our success may depend, in part, on our ability to identify patients who qualify for our clinical trials, or are likely to benefit from any product candidate that we may develop, which will require those potential patients to undergo a screening assay for the presence or absence of a particular genetic sequence or clinical trait. Genetically defined diseases generally, and especially those for which our current product candidates are targeted, may have relatively low prevalence. For example, we estimate there are approximately 2,000 patients diagnosed with UCD in the United States, and approximately 16,500 patients that may be diagnosed with PKU in the United States. If we, or any third parties that we engage to assist us, are unable to successfully identify patients with these diseases, or experience delays in doing so, then we may not realize the full commercial potential of any product candidate we develop.

We may face potential product liability claims, and, if successful claims are brought against us, we may incur substantial liability and costs. If the use or misuse of our product candidates harms patients, or is perceived to harm patients even when such harm is unrelated to our product candidates, our regulatory approvals, if any, could be revoked or otherwise negatively impacted and we could be subject to costly and damaging product liability claims. If we are unable to obtain adequate insurance or are required to pay for liabilities resulting from a claim excluded from, or beyond the limits of, our insurance coverage, such liability could adversely affect our financial condition.

The use or misuse of our product candidates in clinical trials and the sale of any products for which we may obtain marketing approval exposes us to the risk of potential product liability claims. Product liability claims might be brought against us by consumers, healthcare providers, pharmaceutical companies or others selling or otherwise coming into contact with our product candidates and approved products, if any. There is a risk that our product candidates may induce adverse events. If we cannot successfully defend against product liability claims, we could incur substantial liability and costs. Patients with the diseases targeted by our product candidates may already be in severe and advanced stages of disease and have both known and unknown significant preexisting and potentially life-threatening health risks. During the course of treatment, patients may suffer adverse events, including death, for reasons that may be related to our product candidates. Such events could subject us to costly litigation, require us to pay substantial amounts of money to injured patients, delay, negatively impact or end our opportunity to receive or maintain regulatory approval to market our products, or require us to suspend or abandon our commercialization efforts. Even in a circumstance in which an adverse event is unrelated to our product candidates, the investigation into the circumstance may be time-consuming or inconclusive. These investigations may delay our regulatory approval process or impact and limit the type of regulatory approvals our product candidates receive or maintain. As a result of these factors, a product liability claim, even if successfully defended, could have a material adverse effect on our business, financial condition or results of operations.

Although we have product liability insurance, which covers any clinical trial we may conduct in the United States, our insurance may be insufficient to reimburse us for any expenses or losses we may suffer. We will also likely be required to increase our product liability insurance coverage for the advanced clinical trials that we plan to initiate. If we obtain marketing approval for any of our product candidates, we will need to expand our insurance coverage to include the sale of commercial products. There is no way to know if we will be able to continue to obtain product liability coverage and obtain expanded coverage we may require, in sufficient amounts to protect us against losses due to liability, on acceptable terms, or at all. We may not have sufficient resources to pay for any liabilities resulting from a claim excluded from, or beyond the limits of, our insurance coverage. Where we have provided indemnities in favor of third parties under our agreements with them, there is also a risk that these third parties could incur liability and bring a claim under such indemnities. An individual may bring a product liability claim against us alleging that one of our product candidates or products causes, or is claimed to have caused, an injury or is found to be unsuitable for consumer use. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability, and a breach of warranties. Claims could also be asserted under state consumer protection acts. Any product liability claim brought against us, with or without merit, could result in:

- withdrawal of clinical trial volunteers, investigators, patients or trial sites or limitations on approved indications;
- the inability to commercialize, or if commercialized, decreased demand for, our product candidates;

- if commercialized, product recalls, withdrawals of labeling, marketing or promotional restrictions or the need for product modification;
- initiation of investigations by regulators;
- loss of revenues;
- substantial costs of litigation, including monetary awards to patients or other claimants;
- liabilities that substantially exceed our product liability insurance, which we would then be required to pay ourselves;
- an increase in our product liability insurance rates or the inability to maintain insurance coverage in the future on acceptable terms, if at all;
- the diversion of management's attention from our business; and
- damage to our reputation and the reputation of our products and our technology.

Product liability claims may subject us to the foregoing and other risks, which could have a material adverse effect on our business, financial condition or results of operations.

Risks Related to Regulatory Approval of Our Product Candidates and Other Legal Compliance Matters

We may seek breakthrough therapy designation for one or more of our product candidates, but we might not receive such designation, and even if we do, such designation may not lead to a faster development or regulatory review or approval process, and it does not increase the likelihood that our product candidates will receive marketing approval.

We may seek a breakthrough therapy designation from the FDA for some of our product candidates. A breakthrough therapy is defined as a drug or biological product that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition, and for which preliminary clinical evidence indicates that the drug or biological product may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. For drugs or biological products that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development. Drugs designated as breakthrough therapies by the FDA could also be eligible for accelerated approval.

Designation as a breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe one of our product candidates meets the criteria for designation as a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. In any event, the receipt of a breakthrough therapy designation for a product candidate may not result in a faster development process, review or approval compared to drugs considered for approval under conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one or more of our product candidates qualify and are designated as breakthrough therapies, the FDA may later decide that the drugs or biological products no longer meet the conditions for designation and the designation may be rescinded.

We may seek Fast-Track designation for one or more of our product candidates, but we might not receive such designation, and even if we do, such designation may not actually lead to a faster development or regulatory review or approval process.

If a product candidate is intended for the treatment of a serious condition and nonclinical or clinical data demonstrate the potential to address unmet medical need for the condition, a product sponsor may apply for FDA Fast-Track designation. We were awarded Fast-Track designation for SYNB1020 in June 2017. Fast-Track designation does not ensure that we will receive marketing approval for the product candidate or that approval will be granted within any particular timeframe. We may not experience a faster development or regulatory review or approval process with Fast-Track designation compared to conventional FDA procedures. In addition, the FDA may withdraw Fast-Track designation if it believes that the designation is no longer supported by data from our clinical development program. Fast-Track designation alone does not guarantee qualification for the FDA's priority review procedures.

Even if we obtain regulatory approval for a product candidate, we will remain subject to ongoing regulatory requirements.

If any of our product candidates are approved for marketing, we will be subject to ongoing regulatory requirements, including with respect to manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping, conduct of post-marketing clinical trials, and submission of safety, efficacy and other post-approval information, including both federal and state requirements in the United States and requirements of comparable foreign regulatory authorities.

Manufacturers and manufacturers' facilities are required to continuously comply with FDA and comparable foreign regulatory authority requirements, including ensuring that quality control and manufacturing procedures conform to current Good Manufacturing Practices (cGMP) regulations and corresponding foreign regulatory manufacturing requirements. As such, we and our contract manufacturers will be subject to continual review and inspections to assess compliance with cGMP and adherence to commitments made in any Biologic License Application (BLA) or marketing authorization application.

Any regulatory approvals that we receive for our product candidates may be subject to limitations on the approved indicated uses for which the product candidate may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase 4 clinical trials, and surveillance to monitor the safety and efficacy of the product candidate. We will be required to report adverse reactions and production problems, if any, to the FDA and comparable foreign regulatory authorities. Any new legislation addressing drug safety issues could result in delays in product development or commercialization, or increased costs to assure compliance. If our original marketing approval for a product candidate was obtained through an accelerated approval pathway, we could be required to conduct a successful post-marketing clinical trial in order to confirm the clinical benefit for our products. An unsuccessful post-marketing clinical trial or failure to complete such a trial could result in the withdrawal of marketing approval.

If a regulatory agency discovers previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, or disagrees with the promotion, marketing or labeling of a product, the regulatory agency may impose restrictions on that product or us, including requiring withdrawal of the product from the market. If we fail to comply with applicable regulatory requirements, a regulatory agency or enforcement authority may, among other things:

- issue warning letters;
- impose civil or criminal penalties;
- suspend or withdraw regulatory approval or revoke a license;
- suspend any of our ongoing clinical trials;
- refuse to approve pending applications or supplements to approved applications submitted by us;
- impose restrictions on our operations, including closing our contract manufacturers' facilities; or
- require a product recall.

Any government investigation of alleged violations of law would be expected to require us to expend significant time and resources in response and could generate adverse publicity. Any failure to comply with ongoing regulatory requirements may significantly and adversely affect our ability to develop and commercialize our products and our value and operating results would be adversely affected.

Healthcare legislative reform measures may have a material adverse effect on our financial condition or results of operations.

In the United States, there have been and continue to be a number of legislative initiatives to contain healthcare costs. For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (collectively, the ACA), was passed, which was intended to substantially change the way health care is financed by both governmental health programs and private insurers, and significantly impact the U.S. pharmaceutical industry. The ACA, among other things, introduced a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted, or injected, increases the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program and extends the rebate program to individuals enrolled in Medicaid managed care organizations, establishes annual fees and taxes on manufacturers of specified branded prescription drugs, and promotes a new Medicare Part D coverage gap discount program.

The ACA has been under scrutiny by the U.S. Congress almost since its passage, and certain sections of the ACA have not been fully implemented or effectively repealed. As a result, its longevity continues to be uncertain. In addition, ongoing initiatives in the U.S. have increased and will continue to increase pressure on drug pricing. The announcement or adoption of any such initiative could have an adverse effect on potential revenues from any product candidate that we may successfully develop.

It is anticipated that the ACA, as well as other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and an additional downward pressure on the reimbursement our customers may receive for our products. Further, there have been judicial and Congressional challenges to certain aspects of the ACA, and it is expected there will be additional challenges and amendments to the ACA in the future, especially with the recent change in administration. Any reduction in reimbursement from Medicare and other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability or commercialize our products.

We may be subject, directly or indirectly, to federal and state healthcare fraud and abuse laws, false claims laws, and health information privacy and security laws. If we are unable to comply, or have not fully complied, with such laws, we could face substantial penalties.

If we obtain FDA approval for any of our product candidates and begin commercializing those products in the United States, our operations may be subject to various federal and state fraud and abuse laws, including, without limitation, the federal Anti-Kickback Statute, the federal False Claims Act, and physician sunshine laws and regulations. These laws may impact, among other things, our proposed sales, marketing, and education programs. In addition, we may be subject to patient privacy regulation by both the federal government and the states in which we conduct our business. The laws that may affect our ability to operate include:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, to induce, or in return for, the purchase or recommendation of an item or service reimbursable under a federal healthcare program, such as the Medicare and Medicaid programs;
- federal civil and criminal false claims laws and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent;
- the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA), which created new federal criminal statutes that prohibit executing a scheme to defraud any healthcare benefit program and making false statements relating to healthcare matters;
- HIPAA, as amended by the Health Information Technology and Clinical Health Act, and its implementing regulations, which imposes specified requirements relating to the privacy, security, and transmission of individually identifiable health information;
- the federal physician sunshine requirements under the ACA require manufacturers of drugs, devices, biologics, and medical supplies to report annually to the U.S. Department of Health and Human Services information related to payments and other transfers of value to physicians, other healthcare providers, and teaching hospitals, and ownership and investment interests held by physicians and other healthcare providers and their immediate family members and applicable group purchasing organizations; and
- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws that may apply to items or services reimbursed by any third-party payor, including governmental and private payors, to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures, and state laws governing the privacy and security of health information in specified circumstances, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts.

Because of the breadth of these laws and the narrowness of the statutory exceptions and safe harbors available, it is possible that some of our business activities could be subject to challenge under one or more of such laws. In addition, recent health care reform legislation has strengthened these laws. For example, the ACA, among other things, amends the intent requirement of the federal anti-kickback and criminal healthcare fraud statutes. A person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it. Moreover, the ACA provides that the government may assert that a claim including items or services resulting from a violation of the federal anti-kickback statute constitutes a false or fraudulent claim for purposes of the False Claims Act.

If our operations are found to be in violation of any of the laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, exclusion from participation in government health care programs, such as Medicare and Medicaid, imprisonment, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on our business, financial condition or results of operations.

Our research and development activities and our third-party manufacturers' and suppliers' activities involve the controlled storage, use, and disposal of hazardous materials, including the components of our product candidates and other hazardous compounds. We and our manufacturers and suppliers are subject to laws and regulations governing the use, manufacture, storage, handling, and disposal of these hazardous materials. In some cases, these hazardous materials and various wastes resulting from their use are stored at our and our manufacturers' facilities pending their use and disposal. We cannot eliminate the risk of contamination, which could cause an interruption of our research and development efforts, commercialization efforts and business operations and environmental damage resulting in costly clean-up and liabilities under applicable laws and regulations governing the use, storage, handling, and disposal of these materials and specified waste products. Although we believe that the safety procedures utilized by us and our third-party manufacturers for handling and disposing of these materials generally comply with the standards prescribed by these laws and regulations, we cannot guarantee that this is the case or eliminate the risk of accidental contamination or injury from these materials. In such an event, we may be held liable for any resulting damages and such liability could exceed our resources and state or federal or other applicable authorities may curtail our use of specified materials and/or interrupt our business operations. Furthermore, environmental laws and regulations are complex, change frequently, and have tended to become more stringent. We cannot predict the impact of such changes and cannot be certain of our future compliance. Given the nature of the research and development work conducted by us, we do not currently carry biological or hazardous waste insurance coverage.

Laws and regulations governing international operations may preclude us from developing, manufacturing and selling certain products outside of the United States and require us to develop, implement and maintain costly compliance programs.

To develop, manufacture and sell certain products outside the United States, we must dedicate resources to comply with numerous laws and regulations in each jurisdiction in which we operate. The Foreign Corrupt Practices Act (FCPA), prohibits any United States individual or business from paying, offering, authorizing payment or offering anything of value, directly or indirectly, to any foreign official, political party or candidate for the purpose of influencing any act or decision of the foreign entity in order to assist the individual or business in obtaining or retaining business. The FCPA also obligates companies whose securities are listed in the United States to comply with certain accounting provisions requiring the company to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and to devise and maintain an adequate system of internal accounting controls for international operations.

Compliance with the FCPA is expensive and difficult, particularly in countries in which corruption is a recognized problem. In addition, the FCPA presents particular challenges in the pharmaceutical industry, because, in many countries, hospitals are operated by the government, and doctors and other hospital employees may be considered government employees or foreign officials. In other circumstances, certain payments to hospitals in connection with clinical trials and other work have been deemed to be improper payments to government officials and have led to FCPA enforcement actions.

Various laws, regulations and executive orders also restrict the use and dissemination outside of the United States, or the sharing with certain non-United States nationals, of information classified for national security purposes, as well as certain products and technical data relating to those products. These laws may preclude us from developing, manufacturing, or selling certain products and product candidates outside of the U.S., which could limit our growth potential and increase our development costs.

The failure to comply with laws governing international business practices may result in substantial civil and criminal penalties and suspension or debarment from government contracting. The SEC also may suspend or bar issuers from trading securities on U.S. exchanges for violations of the FCPA's accounting provisions and export control laws.

Our internal computer systems, or those of our collaborators or other contractors or consultants, may fail or suffer security breaches, which could result in a material disruption of our product development programs.

Our internal computer systems and those of our current and any future collaborators and other contractors or consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations, whether due to a loss of our trade secrets or other proprietary information or other similar disruptions. For example, the loss of preclinical or clinical trial data could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability, our competitive position could be harmed, and the further development and commercialization of our product candidates could be delayed.

Ethical, legal and social concerns about synthetic biology and genetic engineering could limit or prevent the use of our technologies and limit our revenues.

Our technologies involve the use of synthetic biology and genetic engineering. Public perception about the safety and environmental hazards of, and ethical concerns over, synthetic biology and genetic engineering could influence public acceptance of our technologies, product candidates and processes. If we and our collaborators are not able to overcome the ethical, legal and social concerns relating to synthetic biology and genetic engineering, our technologies, product candidates and processes may not be accepted. These concerns could result in increased expenses, regulatory scrutiny and increased regulation, trade restrictions on imports of Synthetic Biotic medicines, delays or other impediments to our programs or the public acceptance and commercialization of Synthetic Biotic medicines. Further, there is a risk that Synthetic Biotic medicines made using our technologies could result in adverse health effects or other adverse events, which could also lead to negative publicity. We design and produce product candidates with characteristics comparable or disadvantaged to those found in naturally occurring organisms or enzymes in a controlled laboratory; however, the release of such organisms into uncontrolled environments could have unintended consequences. Any adverse effect resulting from such a release could have a material adverse effect on our business, financial condition or results of operations and we may have exposure to liability for any resulting harm.

Risks Related to Our Intellectual Property

We may not be successful in obtaining or maintaining necessary rights to Synthetic Biotic targets, product candidates and processes for our development pipeline through acquisitions and in-licenses.

Presently, we have rights to certain intellectual property, through licenses from third parties and under patents and patent applications owned by us. The growth of our business will likely depend in part on our ability to obtain, maintain or enforce our and our licensors' intellectual property rights and to acquire or in-license additional proprietary rights. For example, our programs may involve additional product candidates or delivery systems that may require the use of additional proprietary rights held by third parties. Our ultimate product candidates may also require specific formulations to work effectively and efficiently. These formulations may be covered by intellectual property rights held by others. We may be unable to acquire or in-license any relevant third-party intellectual property rights that we identify as necessary or important to our business operations.

In addition, our product candidates may require specific formulations to work effectively and efficiently and these rights may be held by other third parties. We may be unable to develop, acquire or in-license compositions, methods of use, processes or other third-party intellectual property rights from third parties that we identify. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of other companies may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider attractive. These companies could have a competitive advantage over us due to their size, cash resources and greater clinical development and commercialization capabilities.

For example, we have previously and may continue to collaborate with academic institutions to accelerate our preclinical research or development under written agreements with these institutions. Typically, these institutions provide an option to negotiate a license to any of the institution's rights in technology resulting from the collaboration. Regardless of such right of first negotiation for intellectual property, we may be unable to negotiate a license within the specified time frame or under terms that are acceptable to it. If we are unable to do so, the institution may offer the intellectual property rights to other parties, potentially blocking our ability to pursue our program.

In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. We also may be unable to license or acquire third-party intellectual property rights on terms that would allow us to make an appropriate return on our investment. If we are unable to successfully obtain rights to third-party intellectual property rights, our business, financial condition and prospects for growth could suffer.

We intend to rely on patent rights and the status of our product candidates, if approved, as biologics eligible for exclusivity under the Biologics Price Competition and Innovation Act (BPCIA). If Synlogic is unable to obtain or maintain exclusivity from the combination of these approaches, Synlogic may not be able to compete effectively in our markets.

We rely or will rely upon a combination of patents, trade secret protection, and confidentiality agreements to protect the intellectual property related to our technologies and product candidates. Our success depends in large part on our and our licensors' ability to obtain regulatory exclusivity and maintain patent and other intellectual property protection in the United States and in other countries with respect to our proprietary technology and products.

We have sought to protect our proprietary position by filing patent applications in the United States and abroad related to our product candidates that are important to our business. This process is expensive and time consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. 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.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain and involves complex legal and factual questions for which legal principles remain unsolved. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our product candidates in the United States or in other foreign countries. There is no assurance that all potentially relevant prior art relating to our patents and patent applications has been found, which can invalidate a patent or prevent a patent from issuing from a pending patent application. Even if patents do successfully issue, and even if such patents cover our product candidates, third parties may challenge their validity, enforceability, or scope, which may result in such patents being narrowed, found unenforceable or invalidated. Furthermore, even if they are unchallenged, our patents and patent applications may not adequately protect our intellectual property, provide exclusivity for our product candidates, or prevent others from designing around our claims. Any of these outcomes could impair our ability to prevent competition from third parties, which may have an adverse impact on our business.

We, independently or together with our licensors, have filed several patent applications covering various aspects of our product candidates. We cannot offer any assurances about which, if any, patents will issue, the breadth of any such patent or whether any issued patents will be found invalid and unenforceable or will be threatened by third parties. Any successful opposition to these patents or any other patents owned by or licensed to us after patent issuance could deprive us of rights necessary for the successful commercialization of any product candidates that we may develop. Further, if we encounter delays in regulatory approvals, the period of time during which we could market a product candidate under patent protection could be reduced.

Even if we cannot obtain and maintain effective protection of exclusivity from our regulatory efforts and intellectual property rights, including patent protection, data exclusivity or orphan drug exclusivity, for our product candidates, we believe that our product candidates will be protected by exclusivity that prevents approval of a biosimilar in the United States for a period of twelve years from the time the product to which it claims similarity was first approved. However, The Biologics Price Competition and Innovation Act of 2009, Title VII, Subtitle A of the Patent Protection and Affordable Care Act, Pub.L.No.111-148, 124 Stat.119, Sections 7001-02 signed into law March 23, 2010, and codified in 42 U.S.C. §262 (the BPCIA), created an elaborate and complex patent dispute resolution mechanism for biosimilars that could prevent us from launching our product candidates in the United States or could substantially delay such launches. Current biosimilars litigation are addressing certain requirements of the BPCIA which is creating uncertainty over how certain terms of the BPCIA should be construed and this, presents uncertainty for both the biologics innovator and biosimilar party. The BPCIA mechanism required for biosimilar applicants may pose greater risk that patent infringement litigation will disrupt our activities and add increased expenses as well as divert management's attention. If a biosimilar version of one of our product candidates were approved in the United States, it could have a negative effect on our business.

We may not have sufficient patent term protections for our product candidates to effectively protect our business.

Patents have a limited term. In the United States, the statutory expiration of a patent is generally 20 years after it is filed. Although various extensions may be available, the life of a patent, and the protection it affords, is limited. Even if patents covering our product candidates are obtained, once the patent life has expired for a product candidate, we may be open to competition. In addition, upon issuance in the United States any patent term can be adjusted based on specified delays caused by the applicant(s) or the USPTO.

Patent term extensions under the Hatch-Waxman Act in the United States and under supplementary protection certificates in Europe may be available to extend the patent or data exclusivity terms of our product candidates. We will likely seek patent term extensions, and we cannot provide any assurances that any such patent term extensions will be obtained and, if so, for how long. As a result, we may not be able to maintain exclusivity for our product candidates for an extended period after regulatory approval, if any, which would negatively impact our business, financial condition, results of operations and prospects. If we do not have sufficient patent terms or regulatory exclusivity to protect our product candidates, our business and results of operations will be adversely affected.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our products, and recent patent reform legislation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents.

As is the case with other biotechnology companies, our success is heavily dependent on patents. Obtaining and enforcing patents in the biotechnology industry involves both technological and legal complexity, and is therefore costly, time-consuming and inherently uncertain. In addition, the United States has recently enacted and is currently implementing wide-ranging patent reform legislation. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in specified circumstances and

weakened the rights of patent owners in specified situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future.

If we are unable to maintain effective proprietary rights for our product candidates or any future product candidates, we may not be able to compete effectively in our proposed markets.

In addition to the protection afforded by patents, we rely on trade secret protection and confidentiality agreements to protect proprietary know-how that is not patentable or that we elect not to patent. We also utilize processes for which patents are difficult to enforce. In addition, other elements of our products, and many elements of our product candidate discovery and development processes involve proprietary know-how, information or technology that is not covered by patents. Trade secrets may be difficult to protect. We seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements with our employees, consultants, collaborators, advisors, independent contractors or other third parties. We also seek to preserve the integrity and confidentiality of our data and trade secrets, including by maintaining physical and electronic security of our premises and our information technology systems. While we have confidence in these individuals, organizations and systems, agreements or security measures may be breached, and we may not have adequate remedies for any breach. In addition, competitors may otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. Furthermore, the laws of some foreign countries do not protect proprietary rights to the same extent or in the same manner as the laws of the United States. As a result, we may encounter significant problems in protecting and defending our intellectual property both in the United States and abroad. If we are unable to prevent unauthorized material disclosure of our intellectual property to third parties, or misappropriation of our intellectual property by third parties, we may not be able to establish or maintain a competitive advantage in our market, which could materially adversely affect our business, operating results, and financial condition.

Although we expect all of our employees and consultants to assign their inventions to us, and all of our employees, consultants, collaborators, advisors, independent contractors and any third parties who have access to our proprietary know-how, information, or technology to enter into confidentiality agreements, we cannot provide any assurances that all such agreements have been duly executed or that our trade secrets and other confidential proprietary information will not be disclosed or that competitors will not otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. Misappropriation or unauthorized disclosure of our trade secrets could impair our competitive position and may have a material adverse effect on our business, financial condition or results of operations. Additionally, if the steps taken to maintain our trade secrets are deemed inadequate, we may have insufficient recourse against third parties for misappropriating the trade secret.

Third-party claims of intellectual property infringement may prevent or delay our development and commercialization efforts.

Our commercial success depends in part on our ability to develop, manufacture, market and sell our product candidates and use our proprietary technology without infringing the patent rights of third parties. Numerous third-party U.S. and non-U.S. issued patents and pending applications exist in the area of Synthetic Biotics. We are aware of U.S. and foreign patents and pending patent applications owned by third parties that cover similar therapeutic uses as the product candidates we are developing. We are currently monitoring these patents and patent applications. We may in the future pursue available proceedings in the U.S. and foreign patent offices to challenge the validity of these patents and patent applications. In addition, or alternatively, we may consider whether to seek to negotiate a license of rights to technology covered by one or more of such patents and patent applications. If any patents or patent applications cover our product candidates or technologies, we may not be free to manufacture or market our product candidates as planned, absent such a license, which may not be available to us on commercially reasonable terms, or at all.

It is also possible that we have failed to identify relevant third-party patents or applications. For example, applications filed before November 29, 2000 and applications filed after that date that will not be filed outside the United States remain confidential until patents issue. Moreover, it is difficult for industry participants, including us, to identify all third-party patent rights that may be relevant to our product candidates and technologies because patent searching is imperfect due to differences in terminology among patents, incomplete databases and the difficulty in assessing the meaning of patent claims. We may fail to identify relevant patents or patent applications or may identify pending patent applications of potential interest but incorrectly predict the likelihood that such patents may issue with claims of relevance to our technology. In addition, we may be unaware of one or more issued patents that would be infringed by the manufacture, sale or use of a current or future product candidate, or we may incorrectly conclude that a third-party patent is invalid, unenforceable or not infringed by our activities. Additionally, pending patent applications that have been published can, subject to specified limitations, be later amended in a manner that could cover our technologies, our product candidates or the use of our product candidates.

There have been many lawsuits and other proceedings filed by third parties involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, oppositions, and reexamination, post-grant review and equivalent proceedings before the USPTO and corresponding foreign patent offices. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we are developing product candidates. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our product candidates may be subject to claims of infringement of the patent rights of third parties.

Parties making claims against us may obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize one or more of our product candidates. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business. In the event of a successful claim of infringement against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, pay royalties, redesign our infringing products or obtain one or more licenses from third parties, which may be impossible or require substantial time and monetary expenditure.

We depend, in part, on our licensors to file, prosecute, maintain, defend and enforce patents and patent applications that are material to our business.

While we normally seek and gain the right to fully prosecute the patent applications relating to our product candidates, there may be times when the patent applications enabling our product candidates are controlled by our licensors. If any of our existing or future licensors fail to appropriately and broadly prosecute and maintain patent protection for patents covering any of our product candidates, our ability to develop and commercialize those product candidates may be adversely affected and we may not be able to prevent competitors from making, using, importing, and selling competing products. In addition, even where we now have the right to control patent prosecution of patents and patent applications we have licensed from third parties, we may still be adversely affected or prejudiced by actions or inactions of our licensors in effect from actions prior to us assuming control over patent prosecution.

If we fail to comply with obligations in the agreements under which we license intellectual property and other rights from third parties or otherwise experience disruptions to our business relationships with our licensors, we could lose license rights that are important to our business.

We are a party to certain intellectual property license agreements that are important to our business and expect to enter into additional license agreements in the future. Our existing agreements impose, and we expect that future license agreements will impose, certain obligations, including the payment of milestones and royalties based on revenues from sales of our products utilizing the technologies licensed from our licensors, and such obligations could adversely affect the overall profitability for us of any products that we may seek to commercialize. In addition, we will need to outsource and rely on third parties for many aspects of the clinical development, sales and marketing of our product candidates covered under our license agreements. Delay or failure by these third parties could adversely affect the continuation of our license agreements with our third-party licensors. If we fail to comply with our obligations under these agreements, or we are subject to a bankruptcy, these agreements may be subject to termination by the licensor which could have a material adverse effect on our business.

We may be involved in lawsuits to protect or enforce our patents or the patents of our licensors, which could be expensive, time consuming, and unsuccessful.

Competitors may infringe our patents or the patents of our licensors. To cease such infringement or unauthorized use, we or one of our licensing partners may be required to file patent infringement claims against a third party to enforce one of our patents which can be expensive, time-consuming and unpredictable. In addition, in an infringement proceeding or a declaratory judgment action against us, a court may decide that one or more of our patents is not valid or is unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation or defense proceeding could put one or more of our patents at risk of being invalidated, held unenforceable or interpreted narrowly and could put our patent applications at risk of not issuing. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business.

If we or one of our licensing partners were to initiate legal proceedings against a third party to enforce a patent covering one of our product candidates, the defendant could counterclaim that the patent covering our product candidate is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace, and there are numerous grounds upon which a third party can assert invalidity or unenforceability of a patent. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, written description, clarity or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO, or made a misleading statement, during prosecution. Third parties may also raise similar claims before administrative bodies in the United States or other jurisdictions,

even outside the context of litigation. Such mechanisms include re-examination, inter partes review, post-grant review and equivalent proceedings in foreign jurisdictions, such as opposition or derivation proceedings. Such proceedings could result in revocation or amendment to our patents in such a way that they no longer cover and protect our product candidates. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to the validity of our patents, for example, we cannot be certain that there is no invalidating prior art of which we, our patent counsel, and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity, unpatentability and/or unenforceability, we may lose at least part, and perhaps all, of the patent protection on our product candidates. Such a loss of patent protection could have a material adverse impact on our business.

Interference or derivation proceedings provoked by third parties or brought by us or declared by the USPTO may be necessary to determine the priority of inventions or correct inventorship with respect to our patents or patent applications or those of our licensors. An unfavorable outcome could result in a loss of our current patent rights and could require us to cease using the related technology or to attempt to license rights to us from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms. Our defense of litigation, derivation or interference proceedings may result in a decision adverse to our interests and, even if successful, may result in substantial costs and distract our management and other employees. In addition, we may be unable to raise the funds necessary to conduct our clinical trials, continue our research programs, license necessary technology from third parties, or enter into development partnerships that would help us bring our product candidates to market.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. There could also be public announcements of the results of hearings, motions, or other interim proceedings or developments. Any disclosure of confidential information could adversely affect our business. 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.

We may be subject to claims challenging the inventorship of our patents and other intellectual property.

We may in the future be subject to claims that former employees, consultants, collaborators, advisors, independent contractors or other third parties have an interest in our patents or other intellectual property as an inventor or co-inventor or other claims challenging the inventorship of our patents or ownership of our intellectual property (including patents and intellectual property that we in-license). Therefore, our rights to these patents may not be exclusive and third parties, including competitors, may have access to intellectual property that is important to our business. In addition, co-owners from whom we do not yet have a license or assignment may raise claims surrounding inventorship or ownership of patents that ultimately issue from this patent family, potentially resulting in issued patents to which we would not have rights under our existing license agreements. Further, in jurisdictions outside the United States, a license may not be enforceable unless all the owners of the intellectual property agree or consent to the license. In addition, we may have inventorship disputes arising from conflicting obligations of consultants or others who are involved in developing our product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship of our patents. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

We may be subject to claims that our employees, consultants, collaborators, advisors, independent contractors or other third parties have wrongfully used or disclosed confidential information of third parties or that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.

We have received confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at universities, academic research institutions and at other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although we have written agreements with and make every effort to ensure that our employees, consultants, collaborators, advisors, independent contractors or other third parties do not use the proprietary information or intellectual property rights of others in their work for us, we may in the future be subject to claims that our employees, consultants, collaborators, advisors, independent contractors or other third parties have inadvertently or intentionally used or disclosed confidential information of these third parties. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel, which could adversely impact our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

We may not be able to protect our intellectual property rights throughout the world.

We have limited intellectual property rights outside the United States. Filing, prosecuting, and defending patents on product candidates in all countries throughout the world would be prohibitively expensive, and intellectual property rights in some countries outside the United States can have a different scope and strength and be less extensive than those in the United States. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we may not be able to prevent third parties (including competitors) from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we have patent protection, but where enforcement rights are not as strong as those in the United States. These products may compete with our products and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of some countries, particularly some developing countries, do not favor the enforcement of patents, trade secrets, and other intellectual property protection, particularly those relating to biopharmaceutical products, which could make it difficult in those jurisdictions for us to stop the infringement or misappropriation of our patents or other intellectual property rights, or the marketing of competing products in violation of our proprietary rights. Proceedings to enforce our patents and other intellectual property rights in foreign jurisdictions, whether or not successful, could result in substantial costs and divert our efforts and attention from other aspects of our business. Furthermore, such proceedings could put our patents at risk of being invalidated, held unenforceable or interpreted narrowly and could put our patent applications at risk of not issuing and could provoke third parties to assert claims of infringement or misappropriation against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

If our trademarks and trade names are not adequately protected, we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

We have filed for trademark registration of certain marks relating to our current branding. If our trademarks and trade names are not adequately protected, we may not be able to build name recognition in our markets of interest and our business may be adversely affected. Our unregistered trademarks or trade names may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition among potential partners or customers in our markets of interest. At times, competitors may adopt trade names or trademarks similar to ours, thereby impeding our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims brought by owners of other registered trademarks or trademarks that incorporate variations of our unregistered trademarks or trade names. Over the long term, if we are unable to successfully register our trademarks and trade names and establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected. Our efforts to enforce or protect our proprietary rights related to trademarks, trade secrets, domain names, copyrights or other intellectual property may be ineffective and could result in substantial costs and diversion of resources and could adversely impact our financial condition or results of operations.

Risks Related to Our Reliance on Third Parties

We rely, and expect to continue to rely, on third parties to conduct some aspects of our product formulation, research, preclinical, and clinical studies, and those third parties may not perform satisfactorily, including by failing to meet deadlines for the completion of such formulation, research or testing.

We do not independently conduct all aspects of our drug discovery activities, compound formulation research or preclinical studies of product candidates. We currently rely, and expect to continue to rely, on third parties to conduct some aspects of our research and development and preclinical studies. Any of these third parties may terminate their engagements with us at any time. If we need to enter into alternative arrangements, it would delay our product development activities. Our reliance on these third parties for research and development activities reduces our control over these activities but does not relieve us of our responsibilities. For example, for product candidates that we develop and commercialize on our own, we will remain responsible for ensuring that each of our studies that support our clinical trial applications and our clinical trials are conducted in accordance with the study plan and protocols for the trial. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our studies in accordance with regulatory requirements or our stated study plans and protocols, we will not be able to complete, or may be delayed in completing, the necessary preclinical studies to enable us or our strategic alliance partners to select viable product candidates for clinical trial application submissions and will not be able to, or may be delayed in our efforts to, successfully develop and commercialize such product candidates.

We rely on third-party supply and manufacturing partners for drug supplies for our research and development, preclinical activities, and clinical activities, and may do the same for any commercial supplies of our product candidates.

We rely on third-party supply and manufacturing partners to supply the materials and components for, and manufacture, a portion of our research and development and preclinical study drug supplies and may do the same for any clinical trial drug supplies. We have not yet manufactured or formulated any product candidate on a commercial scale and may not be able to do so for any of our product candidates. We will work to develop and optimize our manufacturing process, and we cannot be sure that the process will result in therapies that are safe, potent or effective.

We do not own manufacturing facilities or supply sources for such components and materials, but may develop these capabilities in the future. There can be no assurance that our supply of research and development, preclinical and clinical development drugs and other materials will not be limited, interrupted, restricted in certain geographic regions or of satisfactory quality or continue to be available at acceptable prices. In particular, any replacement of any product formulation manufacturer we may engage could require significant effort and expertise because there may be a limited number of qualified replacements.

The manufacturing process for a product candidate is subject to FDA and foreign regulatory authority review. Suppliers and manufacturers must meet applicable manufacturing requirements and undergo rigorous facility and process validation tests required by regulatory authorities in order to comply with regulatory standards, such as cGMP regulations. In the event that any of our suppliers or manufacturers fails to comply with such requirements or to perform our obligations to us in relation to quality, timing or otherwise, or if our supply of components or other materials becomes limited or interrupted for other reasons, we may be forced to manufacture the materials ourselves, for which we currently do not have the capabilities or resources, or enter into an agreement with another third party, which we may not be able to do on reasonable terms, if at all. In some cases, the technical skills or technology required to manufacture our product candidates may be unique or proprietary to the original manufacturer and we may have difficulty, or there may be contractual restrictions prohibiting us from transferring such skills or technology to another third party and a feasible alternative may not exist. These factors would increase our reliance on such manufacturer or require us to obtain a license from such manufacturer in order to have another third party manufacture our product candidates. If we are required to change manufacturers for any reason, we will be required to verify that the new manufacturer maintains facilities and procedures that comply with quality standards and with all applicable regulations and guidelines. The delays associated with the verification of a new manufacturer could negatively affect our ability to develop product candidates in a timely manner or within budget.

We may rely on third party manufacturers if we receive regulatory approval for any product candidate. To the extent that we have existing, or enter into future, manufacturing arrangements with third parties, we will depend on these third parties to perform their obligations in a timely manner consistent with contractual and regulatory requirements, including those related to quality control and assurance. If we are unable to obtain or maintain third-party manufacturing for product candidates, or to do so on commercially reasonable terms, we may not be able to develop and commercialize our product candidates successfully. Our or a third party's failure to execute on our manufacturing requirements could adversely affect our business in a number of ways, including:

- an inability to initiate or continue clinical trials of product candidates under development;
- delay in submitting regulatory applications, or receiving regulatory approvals, for product candidates;
- loss of the cooperation of a collaborator;
- subjecting our product candidates to additional inspections by regulatory authorities;
- requirements to cease distribution or to recall batches of our product candidates; and
- in the event of approval to market and commercialize a product candidate, an inability to meet commercial demands for our products.

We enter into various contracts in the normal course of our business in which we indemnify the other party to the contract. In the event we have to perform under these indemnification provisions, it could have a material adverse effect on our business, financial condition and results of operations.

In the normal course of business, we periodically enter into academic, commercial, service, collaboration, licensing, consulting and other agreements that contain indemnification provisions. With respect to our academic and other research agreements, we typically indemnify the institution and related parties from losses arising from claims relating to the products, processes or services made, used, sold or performed pursuant to the agreements for which we have secured licenses, and from claims arising from our or our sublicensees' exercise of rights under the agreement. With respect to our collaboration agreements, we indemnify our collaborators from any third-party product liability claims that could result from the production, use or consumption of the product, as well as for alleged infringements of any patent or other intellectual property right by a third party. With respect to consulting agreements, we indemnify consultants from claims arising from the good faith performance of their services.

Should our obligation under an indemnification provision exceed applicable insurance coverage or should we be denied insurance coverage, our business, financial condition and results of operations could be adversely affected. Similarly, if we are relying on a collaborator to indemnify us and the collaborator is denied insurance coverage or the indemnification obligation exceeds the applicable insurance coverage, and if the collaborator does not have other assets available to indemnify us, our business, financial condition and results of operations could be adversely affected.

To the extent we are able to enter into collaborative arrangements or strategic alliances, we may be exposed to risks related to those collaborations and alliances.

We are currently party to an agreement with AbbVie. Biotechnology companies sometimes become dependent upon collaborative arrangements or strategic alliances to complete the development and commercialization of product candidates. If we elect to enter into collaborative arrangements or strategic alliances, these arrangements may place the development of our product candidates outside our control, may require us to relinquish important rights or may otherwise be on terms unfavorable to us.

Dependence on collaborative arrangements or strategic alliances would subject us to a number of risks, including the risk that:

- we may not be able to control the amount and timing of resources that our collaborators may devote to the relevant product candidates;
- our collaborators may experience financial difficulties;
- we may be required to relinquish important rights, such as marketing and distribution rights;
- business combinations or significant changes in a collaborator's business strategy may also adversely affect a collaborator's willingness or ability to complete our obligations under any arrangement;
- a collaborator could independently move forward with a competing drug candidate developed either independently or in collaboration with others, including our competitors; and
- collaborative arrangements are often terminated or allowed to expire, which would delay the development and may increase the cost of developing our drug candidates.

We may attempt to form collaborations in the future with respect to our product candidates, but we may not be able to do so, which may cause us to alter our development and commercialization plans.

We may attempt to form strategic collaborations, create joint ventures or enter into licensing arrangements with third parties with respect to our programs or platform that we believe will complement or augment our existing business. We may face significant competition in seeking appropriate strategic collaborators, and the negotiation process to secure appropriate terms is time consuming and complex. We may not be successful in our efforts to establish such a strategic collaboration for any product candidates and programs on terms that are acceptable to us, or at all. This may be because our product candidates and programs may be deemed to be at too early of a stage of development for collaborative effort, our research and development pipeline may be viewed as insufficient, the competitive or intellectual property landscape may be viewed as too intense or risky, and/or third parties may not view our product candidates and programs as having sufficient potential for commercialization, including the likelihood of an adequate safety and efficacy profile.

Any delays in identifying suitable collaborators and entering into agreements to develop and/or commercialize our product candidates could delay the development or commercialization of our product candidates, which may reduce their competitiveness even if they reach the market. Absent a strategic collaborator, we would need to undertake development and/or commercialization activities at our own expense. If we elect to fund and undertake development and/or commercialization activities on our own, we may need to obtain additional expertise and additional capital, which may not be available to us on acceptable terms or at all. If we are unable to do so, we may not be able to develop our product candidates or bring them to market and our business may be materially and adversely affected.

Risks Related to Commercialization of Our Product Candidates

If any of our product candidates are approved for marketing and commercialization and we are unable to develop sales, marketing and distribution capabilities on our own or enter into agreements with third parties to perform these functions on acceptable terms, we will be unable to successfully commercialize any such future products.

We currently have no sales, marketing or distribution capabilities or experience. If any of our product candidates is approved for marketing and commercialization, we will need to develop internal sales, marketing and distribution capabilities to commercialize such products, which would be expensive and time-consuming, or enter into collaborations with third parties to perform these services. If we decide to market our products directly, we will need to commit significant financial and managerial resources to

develop a marketing and sales force with technical expertise and supporting distribution, administration and compliance capabilities. If we rely on third parties with such capabilities to market our products or decide to co-promote products with collaborators, we will need to establish and maintain marketing and distribution arrangements with third parties, and there can be no assurance that we will be able to enter into such arrangements on acceptable terms or at all. In entering into third-party marketing or distribution arrangements, any revenue we receive will depend upon the efforts of third parties and there can be no assurance that such third parties will establish adequate sales and distribution capabilities or be successful in gaining market acceptance of any approved product. If we are not successful in commercializing any product approved for marketing and commercialization in the future, either on our own or through third parties, our business, financial condition, results of operations and prospects may be adversely affected.

If the market opportunities for our product candidates are smaller than we believe they are, we may not meet our revenue expectations and, assuming approval of a product candidate, our business may suffer. Because the patient populations in the market for our product candidates may be small, we must be able to successfully identify patients and acquire a significant market share to achieve profitability and growth.

Given the small number of patients who have the diseases that we are targeting, our eligible patient population and pricing estimates may differ significantly from the actual market addressable by our product candidates. Our projections of both the number of people who have applicable diseases, as well as the subset of people with these diseases who have the potential to benefit from treatment with our product candidates, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, patient foundations, or market research, and may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these diseases. The number of patients may turn out to be lower than expected. The potentially addressable patient population for each of our product candidates may be limited or may not be amenable to treatment with our product candidates, and new patients may become increasingly difficult to identify or gain access to, which would adversely affect our business, financial condition, results of operations and prospects.

We face substantial competition and our competitors may discover, develop or commercialize products faster or more successfully than us.

The development and commercialization of new products is highly competitive. We face competition from major pharmaceutical companies, specialty pharmaceutical companies, biotechnology companies, universities and other research institutions worldwide with respect to our product candidates that we may seek to develop or commercialize in the future. For example, Horizon Pharma plc, Dimension Therapeutics, Inc. (acquired by Ultragenyx Pharmaceutical Inc.), Aeglea BioTherapeutics, Inc., Arcturus Therapeutics Inc., Translate Bio (formerly Rana Therapeutics) and Selecta Biosciences, Inc. have developed or are developing product candidates for the treatment of UCD; Valeant Pharmaceuticals International, Inc., Ocera Therapeutics, Inc. (recently acquired by Mallinckrodt Pharmaceuticals), Umecrine Cognition AB, Salix Pharmaceuticals, Ltd, Rebiotix, Inc. as well as other preclinical and discovery stage companies have developed or are each developing product candidates for the treatment of HE; and BioMarin, Inc., MipSalus ApS, Dimension Therapeutics, Inc., Rubius Therapeutics, Homology Medicines, Inc. and Synthetic Biologics, Inc. have developed or are developing product candidates for the treatment of PKU. Our competitors may succeed in developing, acquiring or licensing technologies and products that are more effective or less costly than the product candidates that we are currently developing or that we may develop, which could render our product candidates obsolete and noncompetitive.

In addition to the competition we face from alternative therapies for the diseases we intend to target with our product candidates, we are also aware of several companies that are also working specifically to develop engineered bacteria as cellular drug therapies, such as Intrexon Corp. Further there are several companies working to develop other similar products. Many of our competitors have substantially greater financial, technical and other resources, such as larger research and development staff and experienced marketing and manufacturing organizations. Third-party payors, including governmental and private insurers, may also encourage the use of generic products.

If our competitors obtain marketing approval from the FDA or comparable foreign regulatory authorities for their product candidates more rapidly than us, it could result in our competitors establishing a strong market position before we are able to enter the market.

Many of our competitors have materially greater name recognition and financial, manufacturing, marketing, research and drug development resources than we do. Additional mergers and acquisitions in the biotechnology and pharmaceutical industries may result in even more resources being concentrated in our competitors. Large pharmaceutical companies in particular have extensive expertise in preclinical and clinical testing and in obtaining regulatory approvals for drugs. In addition, academic institutions, government agencies, and other public and private organizations conducting research may seek patent protection with respect to potentially competitive products or technologies. These organizations may also establish exclusive collaborative or licensing relationships with our competitors. Failure of our product candidates to effectively compete against established treatment options or in the future with new products currently in development would harm our business, financial condition, results of operations and prospects.

The commercial success of any of our current or future product candidates will depend upon the degree of market acceptance by physicians, patients, third-party payors, and others in the medical community.

Even with approvals from the FDA and comparable foreign regulatory authorities, the commercial success of our products will depend in part on the health care providers, patients, and third-party payors accepting our product candidates as medically useful, cost-effective, and safe. Any product that we bring to the market may not gain market acceptance by physicians, patients and third-party payors. The degree of market acceptance of any of our products will depend on a number of factors, including but not limited to:

- the efficacy of the product as demonstrated in clinical trials and potential advantages over competing treatments;
- the safety and side effect profile of the product as demonstrated in clinical trials and potential advantages over competing treatments;
- the prevalence and severity of the disease targeted;
- the clinical indications for which approval is granted, including any limitations or warnings contained in a product's approved labeling;
- the convenience and ease of administration;
- the cost of treatment;
- the willingness of the patients and physicians to accept products engineered from bacteria and these therapies;
- the perceived ratio of risk and benefit of these therapies by physicians, patients, and payers, and the willingness of physicians to recommend these therapies to patients based on such risks and benefits;
- the marketing, sales and distribution support for the product;
- the publicity concerning the products or competing products and treatments; and
- the pricing and availability of third-party insurance coverage and reimbursement.

Even if a product displays a favorable efficacy and safety profile upon approval, market acceptance of the product remains uncertain. Efforts to educate the medical community and third-party payors on the benefits of the products may require significant investment and resources and may never be successful. If our products fail to achieve an adequate level of acceptance by physicians, patients, third-party payors, and other health care providers, we will not be able to generate sufficient revenue to become or remain profitable.

We may not be successful in any efforts to identify, license, discover, develop, or commercialize additional product candidates.

Although a substantial amount of our effort will focus on the clinical testing, potential approval, and commercialization of our existing product candidates, the success of our business is also expected to depend in part upon our ability to identify, license, discover, develop, or commercialize additional product candidates. Research programs to identify new product candidates require substantial technical, financial, and human resources. We may focus our efforts and resources on potential programs or product candidates that ultimately prove to be unsuccessful. Our research programs or licensing efforts may fail to yield additional product candidates for clinical development and commercialization for a number of reasons, including but not limited to the following:

- our research or business development methodology or search criteria and process may be unsuccessful in identifying potential product candidates;
- we may not be able or willing to assemble sufficient resources to acquire or discover additional product candidates;
- our product candidates may not succeed in preclinical or clinical testing;
- our potential product candidates may be shown to have harmful side effects or may have other characteristics that may make the products unmarketable or unlikely to receive marketing approval;
- competitors may develop alternatives that render our product candidates obsolete or less attractive;
- product candidates we develop may be covered by third parties' patents or other exclusive rights;
- the market for a product candidate may change during development or commercialization so that such a product may become unreasonable to continue to develop or commercialize;
- a product candidate may not be capable of being produced in commercial quantities at an acceptable cost, or at all; and
- a product candidate may not be accepted as safe and effective by patients, the medical community, or third-party payors.

If any of these events occur, we may be forced to abandon our development efforts for one or more product candidates, or we may not be able to identify, license, discover, develop, or commercialize additional product candidates, which would have a material adverse effect on our business, financial condition or results of operations and could potentially cause us to cease operations.

Failure to obtain or maintain adequate reimbursement or insurance coverage for products, if any, could limit our ability to market those products and decrease our ability to generate revenue.

The pricing, coverage, and reimbursement of our approved products, if any, must be sufficient to support our commercial efforts and other development programs and the availability and adequacy of coverage and reimbursement by third-party payors, including governmental and private insurers, are essential for most patients to be able to afford expensive treatments. Sales of our approved products, if any, will depend substantially, both domestically and abroad, on the extent to which the costs of our approved products, if any, will be paid for or reimbursed by health maintenance, managed care, pharmacy benefit and similar healthcare management organizations, or government payors and private payors. If coverage and reimbursement are not available, or are available only in limited amounts, we may have to subsidize or provide products for free or we may not be able to successfully commercialize our products.

In addition, there is significant uncertainty related to the insurance coverage and reimbursement for newly approved products. In the United States, the principal decisions about coverage and reimbursement for new drugs are typically made by the Centers for Medicare & Medicaid Services (CMS), an agency within the U.S. Department of Health and Human Services, as CMS decides whether and to what extent a new drug will be covered and reimbursed under Medicare. Private payors tend to follow the coverage reimbursement policies established by CMS to a substantial degree. It is difficult to predict what CMS will decide with respect to reimbursement for novel product candidates such as ours and what reimbursement codes our product candidates may receive if approved.

Outside the United States, international operations are generally subject to extensive governmental price controls and other price-restrictive regulations, and we believe the increasing emphasis on cost-containment initiatives in Europe, Canada, and other countries has and will continue to put pressure on the pricing and usage of products. In many countries, the prices of products are subject to varying price control mechanisms as part of national health systems. Price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our products, if any. Accordingly, in markets outside the United States, the potential revenue from the sale of our products may be insufficient to generate commercially reasonable revenue and profits.

Moreover, increasing efforts by governmental and private payors in the United States and abroad to limit or reduce healthcare costs may result in restrictions on coverage and the level of reimbursement for new products and, as a result, they may not cover or provide adequate payment for our products. We expect to experience pricing pressures in connection with products due to the increasing trend toward managed healthcare, including the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs has and is expected to continue to increase in the future. As a result, profitability of our products, if any, may be more difficult to achieve even if they receive regulatory approval.

Risks Related to Our Business Operations and Employees

Our failure to attract and retain senior management and key scientific personnel may prevent us from successfully developing our product candidates or any future product candidate, conducting our clinical trials and commercializing any products.

Our success depends in part on our continued ability to attract, retain and motivate highly qualified management, clinical and scientific personnel. We believe that our future success is highly dependent upon the contributions of our senior management, particularly our president and chief executive officer, chief financial officer, chief medical officer, as well as our senior scientists and other members of our senior management team. The loss of services of any of these individuals could delay or prevent the successful development of our product pipeline, completion of our planned clinical trials or the commercialization of the products we develop.

Although we have not historically experienced significant difficulties attracting and retaining qualified employees, we could experience such problems in the future. For example, competition for qualified personnel in the biotechnology and pharmaceuticals field is intense due to the limited number of individuals who possess the skills and experience required by our industry. We will need to hire additional personnel as we expand our clinical development and commercial activities. We may not be able to attract and retain quality personnel on acceptable terms, or at all.

Our employees, independent contractors, principal investigators, CROs, consultants and collaborators may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements and insider trading.

We are exposed to the risk that our employees, independent contractors, consultants and collaborators may engage in fraudulent conduct or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or unauthorized activities that violate: (1) regulations of regulatory authorities in jurisdictions where we are performing activities in

relation to our product candidates, including those laws requiring the reporting of true, complete and accurate information to such authorities; (2) manufacturing regulations and standards; (3) fraud and abuse and anti-corruption laws and regulations; or (4) laws that require the reporting of true and accurate financial information and data. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, bias, misconduct, kickbacks, self-dealing and other abusive practices, and these laws may differ substantially from country to country. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. These activities also include the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other third parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting ourselves from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending itself or asserting our rights, those actions could have a significant impact on our business including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, possible exclusion from participation in subsidized healthcare programs in a given country, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

Risks Related to the Our Common Stock

Our common stock may be delisted from the Nasdaq Capital Market if we are unable to maintain compliance with Nasdaq's continued listing standards.

Nasdaq imposes, among other requirements, continued listing standards including minimum bid and public float requirements. The price of our common stock must trade at or above $1.00 to comply with Nasdaq's minimum bid requirement for continued listing on the Nasdaq Capital Market. If our stock trades at bid prices of less than $1.00 for a period in excess of 30 consecutive business days, Nasdaq could send a deficiency notice to the company for not remaining in compliance with the minimum bid listing standards. During the year ended December 31, 2017, our common stock never traded below $1.00. However, if the closing bid price of our common stock fails to meet Nasdaq's minimum closing bid price requirement, or if we otherwise fail to meet any other applicable requirements of Nasdaq and we are unable to regain compliance, Nasdaq may make a determination to delist our common stock.

Any delisting of our common stock could adversely affect the market liquidity of our common stock and the market price of our common stock could decrease. Furthermore, if our common stock were delisted it could adversely affect our ability to obtain financing for the continuation of our operations and/or result in the loss of confidence by investors, customers, suppliers and employees.

Our principal stockholders and management own a significant percentage of our stock and are able to exert significant control over matters subject to stockholder approval.

Based on the beneficial ownership of our common stock as of March 1, 2018, our executive officers and directors, together with holders of 5% or more of our common stock outstanding and their respective affiliates, beneficially own approximately 49% of our common stock. Accordingly, these stockholders have significant influence over the outcome of corporate actions requiring stockholder approval, including the election of directors, consolidation or sale of all or substantially all of our assets or any other significant corporate transaction. The interests of these stockholders may not be the same as or may even conflict with your interests. For example, these stockholders could delay or prevent a change of control, even if such a change of control would benefit our other stockholders, which could deprive our stockholders of an opportunity to receive a premium for their common stock as part of a sale of the company or our assets and might affect the prevailing market price of our common stock. The significant concentration of stock ownership may adversely affect the trading price of our common stock due to investors' perception that conflicts of interest may exist or arise.

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, and may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not "emerging growth companies" including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. We cannot predict if investors will find our common stock less attractive because we may 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.

In addition, Section 102 of the JOBS Act also provides that an "emerging growth company" can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. An "emerging growth company" can therefore delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. However, we are choosing to "opt out" of such extended transition period, and as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies. Section 107 of the JOBS Act provides that our decision to opt out of the extended transition period for complying with new or revised accounting standards is irrevocable.

Future sales of our common stock or securities convertible or exchangeable for our common stock may depress our stock price.

If our existing stockholders or holders of our options sell, or indicate an intention to sell, substantial amounts of our common stock in the public market, the trading price of our common stock could decline. The perception in the market that these sales may occur could also cause the trading price of our common stock to decline. As of March 15, 2018 there were a total of 22,172,117 shares of our common stock outstanding.

Our quarterly operating results may fluctuate significantly or may fall below the expectations of investors or securities analysts, each of which may cause our stock price to fluctuate or decline.

We expect our operating results to be subject to quarterly fluctuations. Our net loss and other operating results will be affected by numerous factors, including:

- variations in the level of our operating expenses;
- receipt, modification or termination of government contracts or grants, and the timing of payments we receive under these arrangements;
- Our execution of any collaborative, licensing or similar arrangements, and the timing of payments we may make under these arrangements; and
- any intellectual property infringement lawsuit or opposition, interference or cancellation proceeding in which we may become involved.

If our quarterly operating results fall below the expectations of investors or securities analysts, the price of our common stock could decline substantially. Furthermore, any quarterly fluctuations in our operating results may, in turn, cause the price of the company's stock to fluctuate substantially. We believe that quarterly comparisons of our financial results are not necessarily meaningful and should not be relied upon as an indication of our future performance.

Provisions of our charter documents or Delaware law could delay or prevent an acquisition of us, even if the acquisition would be beneficial to our stockholders, and could make it more difficult for you to change management.

Provisions in our amended and restated certificate of incorporation and our amended and restated bylaws may discourage, delay or prevent a merger, acquisition or other change in control that our stockholders may consider favorable, including transactions in which our stockholders might otherwise receive a premium for their shares. In addition, these provisions may frustrate or prevent any attempt by our stockholders to replace or remove our current management by making it more difficult to replace or remove our Board of Directors. These provisions include:

- a classified board of directors so that not all directors are elected at one time;
- a prohibition on stockholder action through written consent;
- no cumulative voting in the election of directors;
- the exclusive right of our Board of Directors to elect a director to fill a vacancy created by the expansion of our Board of Directors or the resignation, death or removal of a director;
- a requirement that special meetings of our Stockholders be called only by our Board of Directors, the chairman of our Board of Directors, the chief executive officer or, in the absence of a chief executive officer, the president;
- an advance notice requirement for stockholder proposals and nominations;
- the authority of our Board of Directors to issue preferred stock with such terms as our Board of Directors may determine; and
- a requirement of approval of not less than 66 2/3% of all outstanding shares of our capital stock entitled to vote to amend any bylaws by stockholder action, or to amend specific provisions of our certificate of incorporation.

In addition, Delaware law prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder, generally a person who, together with its affiliates, owns or within the last three years has owned 15% or more of the company's voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. Accordingly, Delaware law may discourage, delay or prevent a change in control of the company. Furthermore, our amended and restated certificate of incorporation specifies that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for most legal actions involving actions brought against us by our stockholders. We believe this provision benefits the company by providing increased consistency in the application of Delaware law by chancellors particularly experienced in resolving corporate disputes, efficient administration of cases on a more expedited schedule relative to other forums and protection against the burdens of multi-forum litigation. However, the provision may have the effect of discouraging lawsuits against our directors and officers. The enforceability of similar choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that, in connection with any applicable action brought against us, a court could find the choice of forum provisions contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in such action.

Provisions in our charter and other provisions of Delaware law could limit the price that investors are willing to pay in the future for shares of our common stock.

Our employment agreements with our executive officers may require us to pay severance benefits to any of those persons who are terminated in connection with a change of control, which could harm our business, financial condition or results of operations.

Our current executive officers are parties to employment agreements providing for aggregate cash payments of up to approximately $1.6 million at December 31, 2017 for severance and other benefits in the event of a termination of employment in connection with a change of control. The payment of these severance benefits could harm our business, financial condition and results of operations. In addition, these potential severance payments may discourage or prevent third parties from seeking a business combination with Synlogic.

We do not anticipate paying any cash dividends on our common stock in the foreseeable future; therefore, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future.

We have never declared or paid cash dividends on our common stock. We do not anticipate paying any cash dividends on our common stock in the foreseeable future. We currently intend to retain all available funds and any future earnings to fund our operations. In addition, the terms of any future debt financing arrangement may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future.

If securities or industry analysts do not publish research, or publish inaccurate or unfavorable research, about our business, our stock price and trading volume could decline.

The trading market for our common stock will depend, in part, on the research and reports that securities or industry analysts publish about us or our business. If one or more of the analysts who cover us downgrade our common stock or publish inaccurate or unfavorable research about our business, our stock price would likely decline. In addition, if our operating results fail to meet the forecast of analysts, our stock price would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, demand for our common stock could decrease, which might cause our stock price and trading volume to decline.

Changes in, or interpretations of, accounting rules and regulations could result in unfavorable accounting charges or require us to change our compensation policies.

Accounting methods and policies for biopharmaceutical companies, including policies governing revenue recognition, research and development and related expenses and accounting for stock-based compensation, are subject to further review, interpretation and guidance from relevant accounting authorities, including the SEC. Changes to, or interpretations of, accounting methods or policies may require us to reclassify, restate or otherwise change or revise our financial statements, including those contained in this periodic report.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our corporate headquarters and operations are located in Cambridge, Massachusetts. We currently lease 41,346 square feet of laboratory and office space at 301 Binney Street and until February 2018, we leased 14,390 square feet of laboratory and office space at 200 Sidney Street, both in Cambridge, Massachusetts. The agreement to terminate the lease for the 200 Sidney Street space occurred in July 2017 in conjunction with the execution of the lease for the space in the 301 Binney Street facility. Our 301 Binney Street lease expires in 2028. We believe that our facilities are suitable and adequate for our needs for the foreseeable future.

Item 3. Legal Proceedings.

From time to time, we are subject to various legal proceedings, claims and administrative proceedings that arise in the ordinary course of our business activities. Although the results of the litigation and claims cannot be predicated with certainty, as of the date of this report, we do not believe we are party to any claim, proceeding or litigation the outcome of which, if determined adversely to us, would individually or in the aggregate be reasonably expected to have a material adverse effect on our business. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

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

Market Information

Our common stock has been traded on The Nasdaq Capital Market under the symbol "SYBX" since August 28, 2017, prior to which it was traded under the symbol "MIRN". The following table sets forth, for the periods indicated, the high and low sales prices for the common stock, as reported by Nasdaq:

	High	Low
Year Ended December 31, 2017		
First Quarter	$ 16.45	$ 11.41
Second Quarter	$ 15.05	$ 9.10
Third Quarter	$ 23.00	$ 10.15
Fourth Quarter	$ 20.12	$ 8.76
Year Ended December 31, 2016		
First Quarter	$ 46.55	$ 24.99
Second Quarter	$ 34.58	$ 27.72
Third Quarter	$ 31.15	$ 12.74
Fourth Quarter	$ 13.86	$ 7.84

Stockholders

As of March 15, 2018, there were approximately 157 stockholders of record of our common stock.

Dividends

We have never declared or paid any dividends to our stockholders since our inception and we do not plan to declare or pay cash dividends in the foreseeable future. We currently anticipate that we will retain any future earnings for the operation and expansion of our business.

Unregistered Sales of Securities

Not applicable.

Issuer Purchases of Equity Securities

None.

Item 6. Selected Financial Data.

We are a smaller reporting company as defined by Rule 12b-2 of the Exchange Act and are not required to provide the information required under this item.

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

Forward-Looking Information

The Risk Factors in Part I, Item 1A of this Annual Report on Form 10-K, the audited financial statements and accompanying notes, included elsewhere in this Annual Report on Form 10-K, and this Management's Discussion and Analysis of Financial Condition and Results of Operations should be read together. In addition to historical information, this discussion and analysis contains forward-looking statements within the meaning of Section 27A of the Securities Act, and Section 21E of the Exchange Act. Operating results are not necessarily indicative of results that may occur for the full fiscal year or any other future period. The term "Private Synlogic" refers to Synlogic, Inc. prior to the consummation of the Merger described herein. The term "Mirna" refers to Mirna Therapeutics, Inc. prior to the consummation of the Merger described herein. Unless otherwise indicated, references to the terms "Synlogic," the "Company," "we," "our" and "us" refer to Private Synlogic prior to the consummation of the Merger described herein and Synlogic, Inc. (formerly known as Mirna Therapeutics, Inc.) upon the consummation of the Merger described herein.

Overview

Recent Developments

Merger with Mirna

On August 25, 2017, in connection with, and prior to the completion of, the Merger (as defined below), Mirna effected a 1:7 reverse stock split of its common stock (the Reverse Stock Split). On August 28, 2017, Synlogic, Inc., formerly known as Mirna Therapeutics, Inc. (NASDAQ: MIRN) (Mirna), completed its business combination with Synlogic, Inc. (Private Synlogic when referred to prior to the Merger) in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated as of May 15, 2017, by and among Mirna, Meerkat Merger Sub, Inc. (Merger Sub), and Private Synlogic (the Merger Agreement), pursuant to which Merger Sub merged with and into Private Synlogic, with Private Synlogic surviving as a wholly owned subsidiary of Mirna (the Merger). As part of the Merger, Mirna was renamed Synlogic, Inc. (Public Synlogic) and Private Synlogic was renamed Synlogic Operating Company, Inc. Following completion of the Merger, Private Synlogic, now known as Synlogic Operating Company, Inc., is the surviving corporation of the Merger and a wholly-owned subsidiary of Public Synlogic. The Merger has been accounted for as a "reverse merger" under the acquisition method of accounting for business combinations with Private Synlogic treated as the accounting acquirer of Mirna. The historical financial statements of Private Synlogic have become the historical financial statements of Public Synlogic, or the combined company, and are included in this filing labeled Synlogic, Inc. As a result of the Merger, historical common stock, stock options and additional paid-in capital, including share and per share amounts, have been retroactively adjusted to reflect the equity structure of Public Synlogic, including the effect of the Merger exchange ratio and the Public Synlogic common stock par value of $0.001 per share. See "*Merger with Mirna Therapeutics*" within Note 3 of the notes to our audited consolidated financial statements for the year ended December 31, 2017 included in this Annual Report on Form 10-K for additional discussion of the Merger and the exchange ratio.

Pursuant to the terms of the Merger Agreement and after giving effect to a reverse stock split, at the effective time of the Merger (the Effective Time), each outstanding share of Private Synlogic capital stock was converted into the right to receive approximately 0.5532 shares of Mirna common stock (the Exchange Ratio). In addition, at the Effective Time, Mirna assumed all outstanding options to purchase shares of Private Synlogic common stock, which were exchanged for options to purchase shares of Mirna common stock, in each case appropriately adjusted based on the Exchange Ratio. Mirna also assumed the Synlogic 2017 Stock Incentive Plan (the 2017 Plan). Immediately after the Merger, there were 16,282,496 shares of our common stock outstanding. At this time, the former stockholders and optionholders of Private Synlogic owned, or held rights to acquire, approximately 82.4% of the fully-diluted common stock of the combined company, which for these purposes is defined as the outstanding common stock, plus "in the money" options, assuming that all "in the money" options outstanding immediately prior to the Merger were exercised on a cashless basis immediately prior to the closing of the Merger (the Fully-Diluted Common Stock), with Mirna's stockholders and optionholders immediately prior to the Merger owning approximately 17.6% of the Fully-Diluted Common Stock.

Follow-on Offering of Synlogic Common Stock

On January 26, 2018 we sold 5,130,000 shares of our common stock through a firm commitment, underwritten public offering at a price to the public of $9.75 per share. On January 31, 2018, the underwriters elected to exercise their option to purchase 769,500 additional shares of our common stock at the public offering price, less underwriting discounts and commissions. As a result of the offering, including the exercise of the overallotment option, we received aggregate net proceeds, after underwriting discounts and commissions and other estimated offering expenses, of approximately $53.7 million.

Business

We are a clinical-stage biopharmaceutical company focused on advancing our drug discovery and development platform for Synthetic Biotic™ medicines, which are designed using synthetic biology to genetically reprogram beneficial microbes to treat metabolic and inflammatory diseases and cancer. Synthetic Biotic medicines are generated from our proprietary drug discovery and development platform applying the principles and tools of synthetic biology to engineer beneficial probiotic bacteria to perform or deliver critical therapeutic functions. As living medicines, Synthetic Biotic medicines can be designed to sense a local disease context within a patient's body and to respond by metabolizing a toxic substance, compensating for missing or damaged metabolic pathways in patients, or by delivering combinations of therapeutic factors. Our goal is to lead in the discovery and development of Synthetic Biotic therapies as living medicines capable of robust and precise pathway complementation and delivery of therapeutic benefit.

Our initial focus is on metabolic diseases with the potential to be corrected following oral delivery of a living medicine to the gut. This includes a group of rare genetic diseases called inborn errors of metabolism (IEMs), as well as acquired metabolic diseases caused by organ dysfunction. When delivered orally, Synthetic Biotic medicines are designed to act from the gut to compensate for the dysfunctional metabolic pathway with the intended consequence of reducing the systemic levels of the toxic metabolites. We believe that success in IEMs will enable us to demonstrate the potential of our oral Synthetic Biotic medicines to address metabolic dysfunction while bringing meaningful change to the lives of patients suffering from these debilitating conditions.

Our two lead therapeutic programs are being developed for the treatment of hyperammonemia and phenylketonuria (PKU). SYNB1020, our first therapeutic program, is an oral therapy intended for the treatment of patients with liver disease and hepatic encephalopathy (HE) and in patients with urea cycle disorders (UCD). In these conditions ammonia accumulates in the body and becomes toxic leading to neurocognitive crisis and risk of long-term cognitive or behavioral impairment, coma or death. SYNB1020 has received both Fast Track Designation and Orphan Drug Designation for UCD from the U.S. Food and Drug Administration (the FDA). We initiated a Phase 1 clinical trial in June 2017 to evaluate the safety and tolerability of SYNB1020 in healthy volunteers. In November 2017, we announced top-line data from this study that demonstrated that SYNB1020 was safe and well-tolerated and achieved proof of mechanism. In March 2018, we initiated a clinical trial in patients with cirrhosis and elevated blood ammonia to evaluate the safety and tolerability of SYNB1020 as well as the ability of this Synthetic Biotic medicine to lower systemic levels of ammonia. We also intend to conduct a clinical trial of SYNB1020 in UCD patients. Timing of initiation of this study will be informed by a number of factors including data from our Phase 1b / 2a study in patients with cirrhosis.

Our second program, SYNB1618, is an oral therapy intended for the treatment of PKU, an IEM in which the amino acid phenylalanine (Phe) accumulates in the body as a result of genetic defects. Elevated levels of Phe are toxic to the brain and can lead to neurological dysfunction. SYNB1618 is designed to function in the gut of patients to reduce excess circulating Phe, resulting in normalization of levels in the blood and tissues. In October 2017, the FDA granted SYNB1618 Orphan Drug Designation for PKU. We are planning to initiate a Phase 1 / 2a clinical trial for SYNB1618 in the first half of 2018.

Our early-stage metabolic pipeline includes discovery-stage product candidates for additional IEMs, including maple syrup urine disease (MSUD), isovaleric acidemia (IVA) and organic acidemias. These are rare metabolic deficiencies in which the toxic accumulation of metabolites such as branched chain amino acids in the case of MSUD can lead to neurological decline and death. There are no currently approved pharmaceutical therapies for these disorders, ultimately resulting in patients relying on liver transplants when possible. In 2018 we intend to select a Synthetic Biotic clinical candidate in our MSUD program and advance it into preclinical studies to enable filing of an Investigational New Drug application (IND) with the FDA.

We are also leveraging our proprietary technology platform to develop Synthetic Biotic medicines to treat a broader range of human diseases, including acquired metabolic diseases, inflammation and cancer. Synthetic Biotic medicines are designed to locally deliver combinations of complementary therapeutics to treat these complex disease states. Our portfolio of immuno-oncology (IO) programs is designed to deliver a combination of activities to modify the tumor microenvironment, activate the immune system and result in tumor reduction. In 2018 we intend to select a Synthetic Biotic clinical candidate in our IO program and advance it into preclinical studies to enable filing of an IND application with the FDA.

We have established a collaboration with Ginkgo Bioworks, a privately held synthetic biology company, to discover new living medicines to treat neurological and liver disorders. We also have a collaboration with AbbVie S.à.r.l. (AbbVie) to develop Synthetic Biotic medicines for the treatment of inflammatory bowel disease (IBD) such as Crohn's disease and ulcerative colitis. We may consider entering additional strategic partnerships in the future to maximize the value of our programs and our Synthetic Biotic platform.

We were incorporated in Delaware as TMC Therapeutics, Inc. on March 14, 2014. On July 15, 2014, TMC Therapeutics, Inc. changed its name to Synlogic, Inc. (Private Synlogic when referred to prior to the Merger). On July 2, 2015, the common and preferred stockholders of Private Synlogic executed the Synlogic, LLC Contribution Agreement (the Contribution Agreement),

pursuant to which such common and preferred stockholders contributed such stockholders' equity interests in Private Synlogic in exchange for common and preferred units in a newly formed parent company organized as a limited liability company named Synlogic, LLC (the 2015 Reorganization). In addition, IBDCo was formed as a subsidiary of Synlogic, LLC, as part of the 2015 Reorganization, and we entered into a license, option and merger agreement with AbbVie for the development of treatments for IBD. In May 2017, we completed a series of transactions pursuant to which Synlogic, LLC merged with and into Private Synlogic with Private Synlogic continuing as the surviving corporation (the 2017 Reorganization). In connection with the 2017 Reorganization, Private Synlogic issued shares of its common stock to holders of Synlogic LLC's outstanding common units and preferred stock to holders of Synlogic LLC's outstanding preferred units. In addition, upon consummation of the 2017 Reorganization, the Synlogic, LLC 2015 Plan (the 2015 LLC Plan) and all grants made thereunder were cancelled and were replaced with shares of Private Synlogic common stock under the 2017 Plan with continued vesting on the same terms as the incentive units issued under the 2015 LLC Plan.

We currently operate in one reportable business segment—the discovery and development of Synthetic Biotic medicines. To date, we have dedicated substantially all of our activities to the research and development of our product candidates. We have received approximately $209.2 million in proceeds to date as we financed our operations through approximately $110.7 million in aggregate net proceeds from the sale of Private Synlogic preferred stock and Synlogic, LLC preferred units, approximately $0.4 million in a convertible promissory note with one of our investors, which was converted into Private Synlogic preferred stock, approximately $4.0 million in payments received under the AbbVie Agreement, approximately $40.4 million from our merger with Mirna, net of transaction costs, and approximately $53.7 million in net proceeds from our follow-on public offering of common stock in January 2018.

We have not generated any revenue to date from product sales and have incurred significant operating losses since our inception in 2014. We have incurred net losses of approximately $40.4 million and $20.9 million for the years ended December 31, 2017 and 2016, respectively. As of December 31, 2017 and 2016, we had an accumulated deficit of approximately $71.7 million and $31.2 million, respectively, and we expect to incur losses for the foreseeable future as we develop our product candidates. We expect our expenses and capital requirements will increase substantially in connection with our ongoing activities, as we:

- complete preclinical studies, initiate and complete clinical trials for product candidates;
- contract to manufacture product candidates;
- advance research and development related activities to expand our product pipeline;
- seek regulatory approval for our product candidates;
- maintain, expand and protect our intellectual property portfolio;
- hire additional staff, including clinical, scientific, and management personnel;
- expand our existing infrastructure and secure space in a facility to support continued growth in our research and development efforts; and
- add operational and finance personnel to support product development efforts and to support operating as a public company.

We do not expect to generate product revenue unless and until we successfully complete clinical development and obtain regulatory approvals for our product candidates, either alone or in collaboration with third parties. Additionally, we expect to utilize third-party contract research organizations (CROs) and contract manufacturing organizations (CMOs) to carry out our clinical development and manufacturing activities, and we do not yet have a commercial organization. If we obtain regulatory approval for any of our product candidates, we expect to incur significant expenses related to developing our internal commercialization capability to support product sales, marketing and distribution. Accordingly, we anticipate that we will seek to fund our operations through public or private equity or debt financings, collaborations or licenses, capital lease transactions or other available financing transactions. However, we may be unable to raise additional funds through these or other means when needed. Because of the numerous risks and uncertainties associated with product development, we are unable to predict the timing or amount of increased expenses or when or if it will be able to achieve or maintain profitability. Even if we are able to generate product revenue, we may not become profitable.

Financial Overview

Revenue

Revenue to date is generated from our collaboration agreement with AbbVie. The collaboration agreement contains multiple deliverables, which include an exclusive option for AbbVie to acquire IBDCo and research and development milestones. Payments include an upfront payment of $2.0 million, which we received in December 2015, and a development milestone payment of $2.0 million, which we achieved in May 2017, and may include up to $14.5 million in additional development milestone payments, as well as royalties on product sales, payments upon the achievement of certain regulatory, clinical and commercial milestones, and the execution of AbbVie's option to acquire IBDCo. We expect our revenue to fluctuate for the foreseeable future as it is principally based on the achievement of research and development milestones under our collaboration agreement with AbbVie.

Research and Development Expense

Research and development expense consists of expenses incurred in connection with the discovery and development of our product candidates, including the conduct of preclinical and clinical studies and product development, which are expensed as they are incurred. These expenses consist primarily of:

- compensation, benefits and other employee related expenses;
- supplies to support our internal research and development efforts;
- research and development related facility and depreciation costs; and
- third-party contract costs relating to research, process and formulation development, preclinical and clinical studies and regulatory operations.

The lengthy process of securing regulatory approvals for new drugs requires the expenditure of substantial resources. Any delay or failure to obtain regulatory approvals would materially adversely affect our product candidate development efforts and our business overall. Given the inherent uncertainties of pharmaceutical product development, we cannot estimate with any degree of certainty the likelihood, timing or cost of obtaining regulatory approval and marketing our product candidates and thus, when, if ever, our product candidates will generate revenues and cash flows.

The successful development of our product candidates is highly uncertain and subject to a number of risks. Refer to the risk factors under the heading *Risks Related to the Development of Our Product Candidates* in Part II, Item 1A, found elsewhere in this Annual Report on Form 10-K.

We invest carefully in our pipeline, and the commitment of funding for each subsequent stage of our development programs is dependent upon the receipt of clear, supportive data. We anticipate that we will make determinations as to which additional programs to pursue and how much funding to direct to each program on an ongoing basis in response to the scientific and clinical data of each product candidate, as well as the competitive landscape and ongoing assessments of such product candidate's commercial potential. We expect our research and development costs will be substantial for the foreseeable future. We expect costs associated with our SYNB1020 and SYNB1618 programs to increase as the programs progress through and into clinical trials.

We track direct research and development expenses, consisting principally of external costs, such as costs associated with contract research organizations and manufacturing of preclinical and clinical drug product and other outsourced research and development expenses to specific product programs. Costs related to specific product candidates are tracked upon the selection of a product candidate. We do not allocate employee and consulting-related costs, costs associated with our platform and facility expenses, including depreciation or other indirect costs, to specific product candidate programs because these costs are deployed across multiple product candidate programs under research and development and, as such, are separately classified. The table below summarizes our research and development expenses by categories of costs for the periods presented (in thousands):

	Year ended December 31,	
	2017	2016
SYNB1020	$ 5,528	$ 2,317
SYNB1618	3,564	—
External pre-development candidate expenses and unallocated expenses	8,615	5,527
Internal research and development expenses	12,634	7,166
	$ 30,341	$ 15,010

General and Administrative Expense

General and administrative expense consists primarily of compensation, benefits and other employee-related expenses for personnel in our administrative, finance, legal, information technology, investor relations, business development and human resource functions. Other costs include the legal costs of pursuing patent protection of our intellectual property, general and administrative related facility and information technology infrastructure costs and professional fees for accounting and legal services. We anticipate increases in expenses related to operating as a public company. These increases include legal fees, accounting fees, costs for director and officer liability insurance, fees for investor relations services and costs associated with implementing and complying with corporate governance, internal controls and similar requirements applicable to public companies. We charge all general and administrative expenses to operations as incurred.

Other Income (Expense)

Interest and investment income consists primarily of interest income earned on investments. Interest expense consists of expense related to our capital leases. Other expense consists primarily of losses on foreign currency translation.

Critical Accounting Policies and Estimates

Our discussion and analysis of our financial condition and results of operations is based upon our consolidated financial statements prepared in accordance with generally accepted accounting principles in the U.S.(GAAP). The preparation of these financial statements requires us to make certain estimates and assumptions that affect the reported amounts of assets and liabilities, the reported amounts of revenues and expenses during the reported periods and related disclosures. These estimates and assumptions, including those related to revenue recognition, research and development expenses and accruals and equity-based compensation are monitored and analyzed by us for changes in facts and circumstances, and material changes in these estimates could occur in the future. These critical estimates and assumptions are based on our historical experience, our observance of trends in the industry, and various other factors that are believed to be reasonable under the circumstances and form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from our estimates under different assumptions or conditions.

We believe that the application of the following accounting policies, each of which require significant judgments and estimates on the part of management, are the most critical to aid in fully understanding and evaluating our reported financial results. Our significant accounting policies are more fully described in Note 2, “Summary of Significant Accounting Policies”, to our consolidated financial statements appearing elsewhere in this Annual Report on Form 10-K.

Revenue Recognition

We generate revenue through our collaboration agreement with AbbVie for the development and commercialization of product candidates. The terms of this agreement include payment to us of one or more of the following: nonrefundable, up-front license fees; milestone payments; and royalties on product sales.

We recognize revenue for each unit of accounting when there is persuasive evidence that an arrangement exists, delivery has occurred or services have been rendered, the price is fixed or determinable, and collectability is reasonably assured.

We record amounts we receive prior to satisfying the revenue recognition criteria as deferred revenue in our consolidated balance sheets. Amounts expected to be recognized as revenue within the 12 months following the balance sheet date are classified as current deferred revenue. Amounts not expected to be recognized as revenue within the 12 months following the balance sheet date are classified as deferred revenue, net of current portion.

When we evaluate revenue from agreements, we consider the nature and contractual terms of the arrangement and the nature of our business operations to determine the classification of the transactions. When we are an active participant in the activity and exposed to significant risks and rewards dependent on the commercial success of the collaboration, we will record transactions on a gross basis in the consolidated financial statements and describe the rights and obligations under the collaborative arrangement in the notes to the consolidated financial statements.

Multiple-Element Arrangements

We evaluate revenue from agreements that have multiple elements and determine whether the individual deliverables have value on a stand-alone basis and represent separate units of accounting or whether they must be accounted for as a combined unit of accounting. We account for those deliverables as separate elements when: (i) the delivered item(s) has value to the customer on a stand-alone basis and (ii) if the arrangement includes a general right of return relative to the delivered item(s), delivery or performance of the undelivered item(s) is considered probable and substantially within our control.

The determination that multiple elements in an arrangement meet the criteria for separate units of accounting requires us to exercise our judgement. We consider such factors as the research, manufacturing and commercialization capabilities of the collaboration partner; our retention of any key rights; and the availability of the associated expertise in the general marketplace. In addition, we consider whether the collaboration partner can use the other deliverable(s) for their intended purpose without the receipt of the remaining element(s), whether the value of the deliverable is dependent on the undelivered item(s) and whether there are other vendors that can provide the undelivered element(s).

In situations where we have identified multiple units of accounting, the arrangement consideration that is fixed or determinable is allocated among the separate units of accounting using the relative selling price method. We determine the estimated selling price for units of accounting within each arrangement using vendor-specific objective evidence, or VSOE, of selling price, if available; third-party evidence, or TPE, of selling price if VSOE is not available; or best estimate of selling price, or BESP, if neither VSOE nor TPE is available. We then determine the appropriate period and pattern of recognition. We recognize as revenue, upon delivery, arrangement consideration attributed to deliverables that have stand-alone value from the other deliverables to be provided in an arrangement. For deliverables that do not have stand-alone value from the other deliverables to be provided in an arrangement, we recognize revenue over the estimated performance period, as the arrangement would be accounted for as a single unit of accounting.

If there is no discernible pattern of performance and/or objectively measurable performance measures do not exist, then we recognize revenue under the arrangement for the single unit of accounting on a straight-line basis over the period it expects to complete its performance obligations. Alternatively, if the pattern of performance in which the service is provided to the customer can be determined and objectively measurable performance measures exist, then we recognize revenue under the arrangement using the proportional performance method. Revenue recognized is limited to the lesser of the cumulative amount of payments received or the cumulative amount of revenue earned, as determined using the straight-line method or proportional performance method, as applicable.

Milestones

Contingent consideration from research and development activities that is earned upon the achievement of a substantive milestone is recognized in its entirety in the period in which the milestone is achieved. At the inception of an arrangement that includes milestone payments, we evaluate whether each milestone is substantive and at risk to both parties on the basis of the contingent nature of the milestone. This evaluation includes an assessment of whether: (i) the consideration is commensurate with either our performance to achieve the milestone or the enhancement of the value of the delivered item(s) as a result of a specific outcome resulting from our performance to achieve the milestone, (ii) the consideration relates solely to past performance and (iii) the consideration is reasonable relative to all of the deliverables and payment terms within the arrangement. We use considerable judgement and evaluates factors such as the scientific, clinical, regulatory, commercial and other risks that must be overcome to achieve the respective milestone and the level of effort and investment required to achieve the respective milestone in making the assessment whether a milestone is substantive. Assuming all other revenue recognition criteria are met, we recognize revenue associated with substantive milestones upon successful accomplishment of each milestone and we recognize revenue for milestones that are not considered substantive over the remaining period of performance. To date, we have recognized one substantive milestone under our AbbVie collaboration agreement.

Payments received or reasonably assured after performance obligations are fully met are recognized as earned. Because the recognition of a substantive milestone under a collaboration agreement typically requires the completion of a number of activities conducted over a significant period of time, the expenses related to achieving the milestone often are incurred prior to the period in which the milestone payment is recognized. When we achieve milestones that we consider substantive under our collaboration, we may experience significant fluctuations in our revenue from quarter to quarter and year to year depending on the timing of achieving such substantive milestones.

Up-Front License Fees

We recognize revenues from nonrefundable, up-front license fees related to collaboration and license agreements, including the $2.0 million under the AbbVie collaboration agreement, on a straight-line basis over the contracted or estimate period of performance due to its continued involvement in research and development. The period of performance over which the revenues are recognized is typically the period over which the research and/or development is expected to occur. As a result, we often are required to make estimates regarding drug development and commercialization timelines for compounds being developed pursuant to a collaboration or license agreement. Because the drug development process is lengthy and our collaboration and license agreements typically cover activities over several years, this approach has resulted in the deferral of revenue into future periods. In addition, because of the many risks and uncertainty associated with the development of drug candidates, our estimates regarding the period of performance may change in the future. Any change in our estimates could result in substantial changes to the period over which the revenues from an up-front license fee are recognized. To date, we have had no material changes to our estimated period of continuing involvement under our AbbVie collaboration agreement.

Research and Development Expense

All research and development expenses are expensed as incurred. Research and development expenses comprise costs incurred in performing research and development activities, including compensation, benefits and other employee costs; equity-based compensation expense; laboratory and clinical supplies and other direct expenses; facilities expenses; overhead expenses; fees for contractual services, including preclinical studies, clinical trials, clinical manufacturing and raw materials; and other external expenses. Nonrefundable advance payments for research and development activities are capitalized and expensed over the related service period or as goods are received. When third-party service providers' billing terms do not coincide with our period-end, we are required to make estimates of our obligations to those third parties, including clinical trial costs, contractual service costs and costs for supply of our drug candidates, incurred in a given accounting period and record accruals at the end of the period. We base our estimates on our knowledge of the research and development programs, services performed for the period and the expected duration of the third-party service contract, where applicable. Please read Note 2, "Summary of Significant Accounting Policies" to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K for a further discussion of research and development expenses.

Equity-based Compensation Expense

We have issued incentive units and a restricted common unit award while an LLC and stock options and restricted stock awards at various points in our history as a corporation, depending on our corporate organizational structure.

We measure equity-based compensation to employees and directors based on the grant date fair value of the awards, net of estimated forfeitures, and recognize the associated expense in the consolidated financial statements over the requisite service period of the award, which is generally the vesting period.

Equity-based compensation costs for nonemployee awards are recognized as services are provided, which is generally the vesting period, on a straight-line basis. The measurement date for nonemployee awards is generally the date the performance of services required from the nonemployee is complete. We believe that the fair value of the equity is more reliably measurable than the fair value of the services rendered. The fair value of the award granted to a nonemployee is remeasured at each reporting date until performance is completed with any increase or decrease in fair value recorded as equity-based compensation expense.

We record the expense for equity grants subject to performance-based milestone vesting over the remaining service period when we determine that achievement of the milestone is probable. Management evaluates when the achievement of a performance-based milestone is probable based on the relative satisfaction of the performance conditions as of the reporting date.

The Black-Scholes option-pricing model, and the Black Scholes with barrier option pricing model used for valuing incentive units, requires the use of highly subjective assumptions to estimate the fair value of equity-based awards. If we had made different assumptions, equity-based compensation expense, net loss and net loss per common share/unit could have been significantly different. These assumptions include:

- Fair market value of our common stock: Prior to our Merger, our common stock and common units were not publicly traded so our Board of Directors was required to estimate its fair market value as described below. Subsequent to the Merger, it is determined as the closing trading price of our common stock.
- Threshold price of our incentive units: Prior to our Merger, we determined the price at which an incentive unit would have had a liquidation value of zero at the date of grant in setting the threshold price for incentive units as described below.

- Expected volatility: As we do not have a lengthy trading history for our common stock, the expected stock price volatility for our common stock was based on an average of the historical volatility of a peer group of similar public companies based on daily price observations over a period equivalent to the expected term of the equity award. Industry peers consist of several public companies in the biopharmaceutical industry that are similar in size, stage of life cycle and financial leverage. We intend to continue to consistently apply this process using the same or similar public companies until a sufficient amount of historical information regarding the volatility of our own common stock price becomes available, or unless circumstances change such that the identified companies are no longer similar to us, in which case, more suitable companies whose share prices are publicly available would be utilized in the calculation.
- Expected term: We do not believe we are able to rely on our historical exercise and post-vesting termination activity to provide accurate data for estimating the expected term for use in estimating the fair value-based measurement of our equity awards. Therefore, we have opted to use the "simplified method" for estimating the expected term of our stock options. Since our incentive units did not have an expiration date, we use a probability-weighted estimated term to a liquidity event.
- Risk-free interest rate: The risk-free interest rate is based on the yields of U.S. Treasury securities with maturities similar to the expected term at the time of grant.
- Expected dividend yield: We have never declared or paid any cash dividends and do not presently plan to pay cash dividends in the foreseeable future. Consequently, we use an expected dividend yield of zero.

Prior to the Merger, the Board of Directors determined the estimated per share fair market value of our common stock and common units at various dates considering contemporaneous valuations performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants Practice Aid, *Valuation of Privately-Held Company Equity Securities Issued as Compensation*, or the Practice Aid. The fair market value of the common stock and common units was determined by the Board of Directors at each award grant date based on assumptions, each of which are subjective and generally require judgement and estimation by management, including results obtained from independent third party valuations, our financial position and historical financial performance, the status of technological developments within our product candidates, the composition and ability of the research and management team, an evaluation or benchmark of our competition, the business climate in the marketplace, the illiquid nature of the common stock and common units, arm's length sales of our capital stock (including convertible preferred stock), the effect of the rights and preferences of the preferred stock, and the prospects of a liquidity event. The Board of Directors determined the threshold price for an incentive unit, which was the price at which an incentive unit would have had a liquidation value of zero, considering the fair value of our assets and performed an analysis to determine the per unit amount that a holder would have received upon a distribution event. In determining the fair value of our assets, we relied on independent third-party valuations, which take into account a variety of factors, including our financial position and historical financial performance, the status of technological developments within our products, the composition and ability of the research and management team, an evaluation or benchmark of its competition, the business climate in the marketplace, the illiquid nature of the common units and incentive units, arm's-length sales of our equity, the effect of the rights and preferences of the preferred unit holders, and the prospects of a liquidity event, among others.

Results of Operations

The following discussion summarizes the key factors our management believes are necessary for an understanding of our consolidated financial results.

	Year ended December 31,	
	2017	2016
	(in thousands)	
Revenue	$ 2,444	$ 444
Operating expenses:		
Research and development	30,341	15,010
General and administrative	12,927	6,398
Total operating expenses	43,268	21,408
Loss from operations	(40,824)	(20,964)
Other income (expense):		
Interest and investment income	504	17
Interest expense	(57)	(7)
Other income (expense), net	447	10
Net loss	$ (40,377)	$ (20,954)

Year Ended December 31, 2017 Compared to Year Ended December 31, 2016

Revenue

	Years Ended December 31,		Change	
	2017	2016	$	%
	(dollars in thousands)			
Revenue	$ 2,444	$ 444	$ 2,000	450%

Revenue was $2.4 million for the year ended December 31, 2017 compared to $0.4 million for the year ended December 31, 2016. The increase was due to the $2.0 million development milestone achieved in the AbbVie collaboration in May 2017. The remaining revenue is associated with the upfront, nonrefundable $2.0 million payment from the AbbVie collaboration, which is being recognized over the expected term of the collaboration.

Operating Expenses

	Years Ended December 31,		Change	
	2017	2016	$	%
	(dollars in thousands)			
Operating expenses:				
Research and development	$ 30,341	$ 15,010	$ 15,331	102%
General and administrative	12,927	6,398	6,529	102%
Total operating expenses	$ 43,268	$ 21,408	$ 21,860	102%

Research and Development Expense

Research and development expense was $30.3 million for the year ended December 31, 2017 compared to $15.0 million for the year ended December 31, 2016. The increase of $15.3 million was primarily due to an increase in external costs of approximately $9.9 million for clinical, process and formulation development, pre-clinical and consulting fees. Of this amount $3.2 million related to SYNB1020 primarily for our Phase 1 clinical trial and formulation development, approximately $3.6 million related to SYNB1618 for preclinical studies and process and formulation development and approximately $1.8 million related to the non-cash expense for the issuance of shares of common stock associated with the execution of the license agreement in April 2017 with the Massachusetts Institute of Technology and Boston University. Other increases in research and development expense include $4.1 million associated with compensation, benefits and other employee-related expenses associated with increased headcount, $0.8 million associated with research and development support costs, including increased rent and depreciation from our 200 Sidney Street facility, which we occupied in February 2016, and approximately $0.3 million in temporary support as we supplemented our workforce.

General and Administrative Expense

General and administrative expense was $12.9 million for the year ended December 31, 2017 compared to $6.4 million for the year ended December 31, 2016. The increase of $6.5 million was due primarily to an increase of approximately $4.1 million in professional fees. These fees related to costs of preparing for and being a public company, such as audit fees, investor relations, consulting, filing fees and insurance for our directors and officers. Other professional fee increases were related to corporate legal fees for our May 2017 reorganization and for patent-related legal fees to support our patent portfolio. In addition, an increase of $2.7 million was associated with compensation, benefits and other employee-related expenses associated with increased headcount and equity compensation expense, partially offset by $0.7 million in lower severance expense in 2017.

Other Income (Expense)

	Years Ended December 31,		Change	
	2017	2016	$	%
	(dollars in thousands)			
Other income (expense):				
Interest and investment income	$ 504	$ 17	$ 487	2865%
Interest expense	(57)	(7)	(50)	714%
Other income (expense), net	$ 447	$ 10	$ 437	4370%

Other income (expense) for the year ended December 31, 2017 was $0.4 million compared to $10 for the corresponding period in 2016. The increase of $0.4 million was related to an increase in interest and investment income resulting from higher cash balances, as well as higher interest rates in an interest-bearing account established in September 2016 and an investment account acquired during the Merger with Mirna. These increases in interest and investment income were partially offset by an increase in interest expense associated with the new capital leases.

Liquidity and Capital Resources

We have incurred losses since our inception on March 14, 2014 and, as of December 31, 2017, we had an accumulated deficit of approximately $71.7 million. We have financed our operations to date primarily through the sale of preferred stock, common stock, preferred units, payments received under our AbbVie collaboration agreement, interest earned on investments, and the merger with Mirna. At December 31, 2017, we had approximately $87.0 million in cash, cash equivalents, and marketable securities. In January 2018, we sold 5,130,000 shares of our common stock through a firm commitment, underwritten public offering at a price to the public of $9.75 per share. The underwriters elected to exercise their option to purchase 769,500 additional shares of our common stock at the public offering price, less underwriting discounts and commissions. As a result of the offering, including the exercise of the overallotment option, we received aggregate net proceeds, after underwriting discounts and commissions and other estimated offering expenses, of approximately $53.7 million. Our cash and cash equivalents include amounts held in money market funds and corporate debt securities, stated at cost plus accrued interest, which approximates fair market value. Our available-for-sale securities include amounts held in corporate debt securities. We invest cash in excess of immediate requirements in accordance with our investment policy which limits the amounts we may invest in any one type of investment and required all investments held by us to maintain minimum ratings from Nationally Recognized Statistical Rating Organizations so as to primarily achieve liquidity and capital preservation. We expect that our available capital resources, including our funding from January 2018 discussed above, will be sufficient to meet our cash needs for the next twelve months.

During the year ended December 31, 2017 our cash balance increased approximately $44.9 million. The increase was primarily due to the net proceeds of approximately $26.6 million from the sale of Series B preferred units, approximately $40.4 million from the sale of Series C preferred stock, and approximately $40.4 million, net of transaction costs, received in the Merger. The increase was partially offset by the cash used to operate our business, including payments related to, among other things, research and development and general and administrative expenses as we continued to invest in our primary drug candidates and support the development of our proprietary platform. We also made capital purchases and made payments on our capital leases.

The following table sets forth the major sources and uses of cash for each of the periods below:

	Years ended December 31,	
	2017	2016
	(in thousands)	
Net cash (used in) provided by:		
Operating activities	$ (31,055)	$ (20,408)
Investing activities	9,278	(1,833)
Financing activities	66,678	30,648
Net increase in cash:	$ 44,901	$ 8,407

Cash Flows from Operating Activities

Net cash used in operating activities totaled approximately $31.1 million for the year ended December 31, 2017. The primary use of cash was our net loss of approximately $40.4 million. These uses of cash were partially offset by non-cash items of approximately $6.7 million including equity-based compensation, depreciation and equity-based costs connected with the execution of

a license agreement and approximately $2.6 million in working capital, primarily from increases in accounts payable and accrued expenses and decreases in deferred rent associated with the acceleration of recognition due to the 200 Sidney Street lease termination.

Net cash used in operating activities totaled approximately $20.4 million for the year ended December 31, 2016. The primary uses of cash were our net loss of approximately $21.0 million and a decrease of approximately $0.5 million in working capital primarily from reductions in deferred revenue as revenue was recognized from its collaboration agreement with AbbVie. These uses of cash were partially offset by non-cash items of approximately $1.1 million.

Cash Flows from Investing Activities

Cash provided by investing activities for the year ended December 31, 2017 totaled approximately $9.3 million and resulted from the $40.4 million in net proceeds received in the Merger and the proceeds from the maturity of marketable securities of $22.9 million. These proceeds were partially offset by uses of cash including the purchase of securities of $51.4 million and purchases of property and equipment of $2.6 million, including deposits related to the construction of leasehold improvements associated with the new facilities lease.

Cash used in investing activities for the year ended December 31, 2016 totaled approximately $1.8 million and resulted primarily from the purchase of property and equipment.

Cash Flows from Financing Activities

Cash provided by financing activities for the year ended December 31, 2017 totaled approximately $66.7 million and resulted primarily from the net proceeds from the sale of Class B preferred units in March 2017 of $26.6 million and $40.4 million in net proceeds from the sale of Series C preferred stock in May 2017. These sources of cash were partially offset by $0.4 million of payments on our capital leases.

Cash provided by financing activities for the year ended December 31, 2016 totaled approximately $30.6 million and resulted primarily from the net proceeds of the sale of Class A and Class B preferred units in February 2016 of approximately $17.1 million and $13.6 million, respectively. This source of cash was partially offset by payments on our capital leases of approximately $0.1 million.

Funding Requirements

To date, we have not commercialized any products and have not achieved profitability. We anticipate that we will continue to incur substantial net losses for the next several years as we further develop our product candidates, invest in our proprietary platform technology and operate as a publicly traded company.

We have generated revenue from our AbbVie collaboration, but have not generated any product revenue since our inception and do not expect to generate any product revenue unless we receive regulatory approval for our product candidates. We believe that our cash on hand as of December 31, 2017, as well as additional milestone payments from our current and future collaborators, and our January 2018 follow-on public offering, will be sufficient to meet our anticipated cash requirements for at least the next 12 months. Our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement that involves risks and uncertainties, and actual results could vary materially and negatively as a result of a number of factors, including the factors discussed in the section entitled “Risk Factors” in this Annual Report on Form 10-K. We have based our estimates on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect.

Due to the numerous risks and uncertainties associated with the development of our product candidates, we are unable to estimate precisely the amounts of capital outlays and operating expenditures necessary to complete the development of, and to obtain regulatory approval for, our product candidates. Our funding requirements will depend on many factors, including, but not limited to, the following:

- the initiation, progress, timing, costs and results of clinical trials for our product candidates;
- the time and costs involved in obtaining regulatory approvals for our product candidates;
- the rate of progress and cost of our commercialization activities;
- the success of our research and development efforts;
- the expenses we incur in marketing and selling our product candidates;

- the revenue generated by sales of our product candidates;
- the emergence of competing or complementary technological developments;
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights;
- the terms and timing of any additional collaborative, licensing or other arrangements that we may establish;
- the acquisition of businesses, products and technologies;
- our need to implement additional infrastructure and internal systems; and
- our need to add personnel and financial and management information systems to support our product development and potential future commercialization efforts, and to enable us to operate as a public company.

As an early-stage company, we are subject to a number of risks common to other life science companies, including, but not limited to, the ability to raise additional capital, development by our competitors of new technological innovations, risk of failure in preclinical studies, the safety and efficacy of our product candidates in clinical trials, the regulatory approval process, market acceptance of our products once approved, lack of marketing and sales history, dependence on key personnel and protection of proprietary technology. Our therapeutic programs are currently pre-commercial, spanning discovery through early development and will require significant additional research and development efforts, including extensive preclinical and clinical testing and regulatory approval prior to commercialization of any product candidates. These efforts require significant amounts of additional capital, adequate personnel infrastructure and extensive compliance-reporting capabilities. There can be no assurance that our research and development will be successfully completed, that adequate protection for our intellectual property will be obtained, that any products developed will obtain necessary regulatory approval or that any approved products will be commercially viable. Even if our product development efforts are successful, it is uncertain when, if ever, we will generate revenue from product sales. We may never achieve profitability, and unless and until we do, we will continue to need to raise additional capital or obtain financing from other sources, such as strategic collaborations or partnerships. If we cannot expand our operations or otherwise capitalize on our business opportunities because we lack sufficient capital, our business, financial condition and results of operations could be materially adversely affected.

Contractual Commitments and Obligations

Our commitments for operating leases relate to our leases of office and laboratory space at 301 Binney Street and 200 Sidney Street in Cambridge, Massachusetts.

In July 2017, we entered into an agreement to lease approximately 41,346 square feet of laboratory and office space at 301 Binney Street in Cambridge, Massachusetts. Annual rent is approximately $3.1 million. The ten-year lease commenced in January 2018 and contains provisions for a free-rent period, annual rent increases and an allowance for tenant improvements. Additionally, we have committed to a tenant improvement investment of approximately $1.6 million. In conjunction with the lease, we established a letter of credit of approximately $1.0 million.

In July 2015, we entered into an operating lease for office and laboratory space on Sidney Street in Cambridge, Massachusetts. The operating lease term commenced in February 2016 and expired in April 2021 and had a one year renewal option to extend the lease. We agreed to terminate the lease in July 2017 at a date that is 30 days after the commencement of our new lease. No penalties were associated with the termination of the lease. The operating lease provided for a free-rent period, annual rent increases and an allowance for tenant improvements.

As we are a clinical stage company, having entered the clinic for our first Phase 1 clinical trial in June 2017, we expect our most significant clinical trial expenditures will be with CROs and CMOs. These contracts generally are cancellable, with notice, at our option and do not have cancellation penalties. These items are not included in the table below.

The following table summarizes our contractual obligations at December 31, 2017 (excluding interest):

	Payments due by period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Capital lease obligations	$ 960	$ 468	$ 492	$ —	$ —
Operating lease obligations	36,175	1,250	6,445	10,413	18,067
Total contractual obligations	$ 37,135	$ 1,718	$ 6,937	$ 10,413	$ 18,067

The commitment for capital lease obligations relates to leased lab equipment.

Off-Balance Sheet Arrangements

We do not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, that would have been established for the purpose of facilitating off-balance sheet arrangements (as that term is defined in Item 303 (a)(4)(ii) of Regulation S-K) or other contractually narrow or limited purposes. As such, we are not exposed to any financing, liquidity, market or credit risk that could arise if we had engaged in those types of relationships. We enter into guarantees in the ordinary course of business related to the guarantee of our performance and the performance of our subsidiaries.

JOBS Act

Section 107 of the JOBS Act provides that an emerging growth company can take advantage of the extended transition period provided in Section 7(a)(2)(B) of the Securities Act for complying with new or revised accounting standards. Thus, an emerging growth company can delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this extended transition period and, as a result, we will adopt new or revised accounting standards on the relevant dates on which adoption of such standards is required for public companies.

Recent Accounting Pronouncements

Please read Note 2, “Summary of Significant Accounting Policies” to the consolidated financial statements included elsewhere in this Annual Report on Form 10-K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

Interest Rate Risk

We are a smaller reporting company as defined by Rule 12b-2 of the Exchange Act and are not required to provide this information required under this item.

Item 8. Consolidated Financial Statements and Supplementary Data.

Our consolidated financial statements, together with the independent registered public accounting firm report thereon, appear at pages F-1 through F-36, respectively, of this Annual Report on Form 10-K.

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

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our principal executive officer and principal financial officer, after evaluating the effectiveness of our disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) as of the end of the period covered by this Form 10-K, have concluded that, based on such evaluation, our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to our management, including our principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control

Other than discussed below, there have not been any changes in our internal controls over financial reporting identified in connection with the evaluation of such internal control that occurred during our fiscal quarter ended December 31, 2017 that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

Management's Report on Internal Control Over Financial Reporting

This annual report does not contain management's report on internal control over financial reporting due to the nature and timing of changes to our internal controls as a result of the Merger. Private Synlogic was deemed to be the acquiring company for accounting purposes and the transaction was accounted for as a reverse acquisition in accordance with GAAP. Accordingly, for all purposes, including reporting with the SEC, our financial statements for periods prior to the Merger reflect the historical results of Private Synlogic, and not those of Mirna, and our financial statements for all subsequent periods reflect the results of the combined company.

Following the Merger, we were recapitalized from a private operating company into a public company during our fiscal year. Following the Merger, Mirna's management was not retained and its operations were substantially merged with our operations, which resulted in the elimination of previously existing controls of Mirna. Further, and as described below, the acquired operations of Mirna are insignificant to our 2017 financial statements. Since the Merger took place towards the end of our third quarter, it was not practicable for us, as the accounting acquirer, to effectively and efficiently complete an assessment of our internal controls for the year in which the Merger was consummated. Therefore, the Company is excluding management's report on internal control over financial reporting pursuant to the Section 215.02 of the SEC's Compliance and Disclosure Interpretations.

We also considered the following factors in reaching that conclusion:

- *Timing and Effects of Merger.* The Merger closed during the third fiscal quarter, leaving us with significantly less time in 2017 to conduct an assessment of the Company's internal control over financial reporting in the period between the consummation of the Merger and the date of management's assessment of internal control over financial reporting as required by SEC rules.
- *Changes in Management.* Immediately following the Merger, no employees of Mirna were retained by us. As such, our management was required to develop its own internal controls and processes as if we were a newly public company and without the benefit of prior Mirna management.

- *Integration of Internal Systems*. Our management is only at the early stages of making a determination as to which compliance and control systems to integrate, if any.
- *Significance of Each Entity to the Combined Entity's Financial Statements.* Following the Merger closing, our primary focus has been to develop Synlogic's business as conducted immediately prior to the Merger. For the post-Merger period from the consummation of the Merger through December 31, 2017, expenses recognized related to Mirna's legacy business comprised less than one percent (1%) of our post-Merger expenses.

Our management is currently assessing and implementing our internal controls over financial reporting. Our Annual Report on Form 10-K for the year ending December 31, 2018 will include a management's report on internal control over financial reporting.

Inherent Limitations on the Effectiveness of Controls

A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the controls are met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues or misstatements, if any, within a company have been detected. Accordingly, our controls and procedures are designed to provide reasonable, not absolute, assurance that the objectives of our control system are met. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The response to this item is incorporated by reference from the discussion responsive thereto under the captions "Management and Corporate Governance Matters," "Section 16(a) Beneficial Ownership Reporting Compliance," and "Code of Conduct and Ethics" in the Company's Proxy Statement for the 2018 Annual Meeting of Stockholders.

Item 11. Executive Compensation.

The response to this item is incorporated by reference from the discussion responsive thereto under the caption "Executive Officer and Director Compensation" in the Company's Proxy Statement for the 2018 Annual Meeting of Stockholders.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The response to this item is incorporated by reference from the discussion responsive thereto under the caption "Security Ownership of Certain Beneficial Owners and Management" in the Company's Proxy Statement for the 2018 Annual Meeting of Stockholders.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The response to this item is incorporated by reference from the discussion responsive thereto under the captions "Certain Relationships and Related Person Transactions" and "Management and Corporate Governance" in the Company's Proxy Statement for the 2018 Annual Meeting of Stockholders.

Item 14. Principal Accounting Fees and Services.

The response to this item is incorporated by reference from the discussion responsive thereto under the caption "Independent Registered Public Accounting Firm" in the Company's Proxy Statement for the 2018 Annual Meeting of Stockholders.

PART IV

Item 15. Exhibits, Financial Statement Schedules.

Item 15(a). The following documents are filed as part of this Annual Report on Form 10-K:

Item 15(a)(1) and (2) See "Consolidated Financial Statements and Supplementary Data" at Item 8 to this Annual Report on Form 10-K. Other financial statement schedules have not been included because they are not applicable, or the information is included in the financial statements or notes thereto.

Item 15(a)(3) The following exhibits are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K.

Exhibit Index

Exhibit Number	Exhibit Description	Filed with this Report	Incorporated by Reference herein from Form or Schedule	Filing Date	SEC File/Reg. Number
2.1^	Agreement and Plan of Merger and Reorganization, dated as of May 15, 2017, by and among Mirna Therapeutics, Inc., Meerkat Merger Sub, Inc. and Synlogic, Inc. (included as Annex A to the proxy statement/prospectus/information statement forming a part of this Registration Statement).		8-K (Exhibit 2.1)	5/16/2017	001-37566
3.1	Amended and Restated Certificate of Incorporation		8-K (Exhibit 3.1)	10/6/2015	001-37566
3.2	Certificate of Amendment (Reverse Stock Split) to the Amended and Restated Certificate of Incorporation, dated August 25, 2017		8-K (Exhibit 3.1)	8/28/2017	001-37566
3.3	Certificate of Amendment (Name Change) to the Amended and Restated Certificate of Incorporation		8-K (Exhibit 3.2)	8/28/2017	001-37566
3.4	Amended and Restated Bylaws		8-K (Exhibit 3.2)		
4.1	Form of Common Stock Certificate		S-1/A (Exhibit 4.2)	9/18/2015	333-206544
10.1#	2015 Equity Incentive Award Plan	X			
10.2#	Form of Stock Option Grant Notice and Stock Option Agreement under the 2015 Equity Incentive Award Plan.		S-1/A (Exhibit 10.9(B))	9/11/2015	333-206544
10.3#	Form of Restricted Stock Award Agreement and Restricted Stock Unit Award Grant Notice under the 2015 Equity Incentive Award Plan.		S-1/A (Exhibit 10.9(C))	9/11/2015	333-206544
10.4#	2017 Stock Incentive Plan	X			
10.5#	Form of Stock Option Grant Notice and Stock Option Agreement under 2017 Stock Incentive Plan.		10-Q (Exhibit 10.17)	11/13/2017	00-37566
10.6#	Non-Employee Director Compensation Program.	X			
10.7#	Form of Indemnification Agreement between the Company and each of its directors and officers		S-1/A (Exhibit 10.13)	9/11/2015	333-206544
10.8#	Offer Letter by and between Synlogic and Jose Carlos Gutierrez-Ramos, Ph.D., dated as of March 20, 2015		8-K (Exhibit 10.2)	8/28/2017	001-37566
10.9#	First Amendment to Offer Letter by and between Synlogic and Jose Carlos Gutierrez-Ramos, Ph.D., dated as of May 8, 2017		8-K (Exhibit 10.3)	8/28/2017	001-37566
10.10#	Offer Letter by and between Synlogic and Todd Shegog, dated as of June 17, 2016		8-K (Exhibit 10.4)	8/28/2017	001-37566

10.11#	First Amendment to Offer Letter by and between Synlogic and Todd Shegog, dated as of May 8, 2017		8-K (Exhibit 10.5)	8/28/2017	001-37566
10.12#	Offer Letter by and between Synlogic and Aoife M. Brennan, MB, BCh, BAO, MMSc, dated as of June 22, 2016		8-K (Exhibit 10.6)	8/28/2017	001-37566
10.13#	First Amendment to Offer Letter by and between Synlogic and Aoife M. Brennan, MB, BCh, BAO, MMSc, dated as of November 7, 2016		8-K (Exhibit 10.7)	8/28/2017	001-37566
10.14#	Second Amendment to Offer Letter by and between Synlogic and Aoife M. Brennan, MB, BCh, BAO, MMSc, dated as of May 8, 2017		8-K (Exhibit 10.8)	8/28/2017	001-37566
10.15#	Amended and Restated Letter Agreement by and between Paul Miller, Ph.D., dated as of May 16, 2017		8-K (Exhibit 10.9)	8/28/2017	001-37566
10.16#	Employment Agreement, dated as of September 4, 2017, by and between the Company and Andrew W. Gengos.		8-K (Exhibit 10.1)	10/10/2017	001-37566
10.17#	Separation Agreement by and between the Company and Paul Lammers, dated as of August 20, 2017.		8-K (Exhibit 10.10)	8/28/2017	001-37566
10.18#	Separation Agreement by and between the Company and Alan Fuhrman, dated as of August 20, 2017.		8-K (Exhibit 10.11)	8/28/2017	001-37566
10.19†^	Agreement and Plan of Merger by and among AbbVie S.à.r.l., Suffolk Merger Sub, Inc., Synlogic IBDCo, Inc., Synlogic, LLC, Synlogic, Inc. and the founders named therein, dated as of July 16, 2015; as amended by a First Amendment to Agreement and Plan of Merger, dated as of December 14, 2015		8-K (Exhibit 10.12)	8/28/2017	001-37566
10.20†	License Agreement by and between Synlogic, Inc. and Synlogic IBDCo, Inc., dated as of July 16, 2015		8-K (Exhibit 10.13)	8/28/2017	001-37566
10.21†	License Agreement by and among Trustees of Boston University, Massachusetts Institute of Technology and Synlogic, Inc., dated as of October 18, 2015		8-K (Exhibit 10.14)	8/28/2017	001-37566
10.22†	Exclusive Patent License Agreement by and between Massachusetts Institute of Technology and Synlogic, Inc., dated as of November 9, 2015; as amended by a Letter Agreement by and among Massachusetts Institute of Technology, Synlogic, Inc. and Synlogic IBDCo, dated as of November 9, 2015 and a First Amendment to the Exclusive Patent License Agreement, dated as of July 20, 2016		8-K (Exhibit 10.15)	8/28/2017	001-37566
10.23	Sales Agreement, dated as of October 13, 2017 by and between the registrant and Cowen and Company, LLC		8-K (Exhibit 1.1)	10/16/2017	001-37566
10.24	Lease by and between BMR-Rogers Street LLC and the registrant	X			
21.1	Subsidiaries of the registrant	X			
23.1	Consent of Independent Registered Accounting Firm	X			
31.1	Certification of Chief Executive Officer required by Rule 13a-14(a) or Rule 15d-14(a).	X			
31.2	Certification of Chief Financial Officer required by Rule 13a-14(a) or Rule 15d-14(a).	X			
32.1	Certification required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350).	X			

32.2	Certification required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350).	X
101.INS	XBRL Instance Document	X
101.SCH	XBRL Taxonomy Extension Schema Document	X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document	X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	X

_____

^ The schedules and exhibits to this exhibit have been omitted pursuant to Item 601(b)(2) of Regulation S-K. A copy of any omitted schedule and/or exhibit will be furnished to the SEC upon request.

Management contract or compensatory plans or arrangements.

† Confidential treatment has been requested or granted as to certain portions, which portions have been omitted and filed separately with the SEC.

Item 16. Form 10-K Summary.

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized**.**

Synlogic, Inc.

Date: March 20, 2018

By: /s/ Jose Carlos Gutiérrez-Ramos
Jose Carlos Gutiérrez-Ramos
President and Chief Executive Officer

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

Name	Title	Date
/s/ Jose Carlos Gutiérrez-Ramos **Jose Carlos Gutiérrez-Ramos**	President, Chief Executive Officer and Director *(Principal Executive Officer)*	March 20, 2018
/s/ Todd Shegog **Todd Shegog**	Chief Financial Officer *(Principal Financial Officer and Principal Accounting Officer)*	March 20, 2018
/s/ Peter Barrett **Peter Barrett**	Chairman of the Board	March 20, 2018
/s/ Chau Khuong **Chau Khuong**	Director	March 20, 2018
/s/ Nick Leschly **Nick Leschly**	Director	March 20, 2018
/s/ Edward Mathers **Edward Mathers**	Director	March 20, 2018
/s/ Michael Powell **Michael Powell**	Director	March 20, 2018
/s/ Richard P. Shea **Richard P. Shea**	Director	March 20, 2018

Index to Consolidated Financial Statements of Synlogic, Inc.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors
Synlogic, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Synlogic, Inc. and subsidiaries (the Company) as of December 31, 2017 and 2016, the related consolidated statements of operations, comprehensive loss, contingently redeemable preferred equity and stockholders' equity, and cash flows for the years then ended, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of its operations and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

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

/s/ KPMG LLP

We have served as the Company's auditor since 2015.

Cambridge, Massachusetts
March 20, 2018

SYNLOGIC, INC. AND SUBSIDIARIES

Consolidated Balance Sheets

(In thousands, except share/unit amounts)

	December 31, 2017	December 31, 2016
Assets		
Current assets:		
Cash and cash equivalents	$ 58,440	$ 14,586
Short-term marketable securities	28,585	—
Prepaid expenses and other current assets	1,564	1,477
Total current assets	88,589	16,063
Property and equipment, net	9,783	3,504
Restricted cash	1,097	50
Other assets	230	422
Total assets	$ 99,699	$ 20,039
Liabilities, Contingently Redeemable Preferred Equity and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 2,679	$ 988
Accrued expenses	4,823	2,296
Deferred revenue	444	444
Deferred rent	656	255
Capital lease obligations	425	203
Total current liabilities	9,027	4,186
Long-term liabilities:		
Deferred revenue, net of current portion	668	1,112
Deferred rent, net of current portion	4,500	1,061
Capital lease obligations, net of current portion	466	177
Total long-term liabilities	5,634	2,350
Commitments and contingencies (Note 18)		
Contingently Redeemable Class A preferred units		
Issued and outstanding 0 and 781,693 units as of December 31, 2017 and December 31, 2016, respectively	—	5,000

See accompanying notes to the audited consolidated financial statements.

SYNLOGIC, INC. AND SUBSIDIARIES

Consolidated Balance Sheets (continued)

(In thousands, except share/unit amounts)

	December 31, 2017	December 31, 2016
Stockholders' Equity		
Preferred stock, $0.001 par value		
5,000,000 shares authorized, none issued and outstanding as of December 31, 2017 and December 31, 2016	—	—
Class B preferred units		
Issued and outstanding 0 and 1,029,850 units as of December 31, 2017 and December 31, 2016, respectively	—	13,611
Class A preferred units		
Issued and outstanding 0 and 3,922,027 units as of December 31, 2017 and December 31, 2016, respectively	—	25,548
Common stock, $0.001 par value		
250,000,000 and 0 shares authorized as of December 31, 2017 and December 31, 2016. 16,272,617 shares issued and outstanding as of December 31, 2017 and 0 shares issued and outstanding as of December 31, 2016	16	—
Common units		
Issued and outstanding 0 and 1,847,615 units as of December 31, 2017 and December 31, 2016, respectively	—	592
Additional paid-in capital	156,685	—
Accumulated other comprehensive income	(9)	—
Accumulated deficit	(71,654)	(31,248)
Total contingently redeemable preferred equity and stockholders' equity	85,038	8,503
Total liabilities, contingently redeemable preferred equity and stockholders' equity	$ 99,699	$ 20,039

See accompanying notes to the audited consolidated financial statements.

SYNLOGIC, INC. AND SUBSIDIARIES

Consolidated Statements of Operations

(In thousands, except share/unit and per share/unit amounts)

	Years ended December 31,	
	2017	2016
Revenue	$ 2,444	$ 444
Operating expenses:		
Research and development	30,341	15,010
General and administrative	12,927	6,398
Total operating expenses	43,268	21,408
Loss from operations	(40,824)	(20,964)
Other income (expense):		
Interest and investment income	504	17
Interest expense	(57)	(7)
Other income (expense), net	447	10
Net loss	$ (40,377)	$ (20,954)
Net loss per share attributable to common shareholders - basic and diluted	$ (6.00)	$ —
Weighted-average common shares used in computing net loss per share attributable to common shareholders - basic and diluted	6,724,641	—
Net loss per unit attributable to common unit holders - basic and diluted	$ —	$ (13.30)
Weighted-average common units used in computing net loss per unit attributable to common unit holders - basic and diluted	—	1,575,558

See accompanying notes to the audited consolidated financial statements.

SYNLOGIC, INC. AND SUBSIDIARIES

Consolidated Statements of Comprehensive Loss

(In thousands)

	2017	2016
Net Loss	$ (40,377)	$ (20,954)
Other comprehensive loss:		
Net unrealized losses on marketable securities	(9)	—
Other comprehensive loss	(9)	—
Comprehensive loss	$ (40,386)	$ (20,954)

See accompanying notes to the audited consolidated financial statements.

SYNLOGIC, INC. AND SUBSIDIARIES

Consolidated Statements of Contingently Redeemable Preferred Equity and Stockholders' Equity

(In thousands, except share and unit amounts)

	Contingently redeemable Class A preferred units		Contingently redeemable Series A preferred stock		Class A preferred units		Class B preferred units		Common units	
	Units	Amount	Shares	Amount	Units	Amount	Units	Amount	Units	Amount
Balance at December 31, 2015	419,809	2,383	—	—	1,916,679	11,048	—	—	1,882,190	223
Sale of Class A-3 preferred units, net of issuance costs of $0	361,884	2,617	—	—	2,005,348	14,500	—	—	—	—
Sale of Class B preferred units, net of issuance costs of $317	—	—	—	—	—	—	1,029,850	13,611	—	—
Repurchase of founders' units	—	—	—	—	—	—	—	—	(34,575)	—
Equity-based compensation expense	—	—	—	—	—	—	—	—	—	369
Net loss	—	—	—	—	—	—	—	—	—	—
Balance at December 31, 2016	781,693	5,000	—	—	3,922,027	25,548	1,029,850	13,611	1,847,615	592
Sale of Class B preferred units, net of issuance costs of $18	—	—	—	—	—	—	1,971,717	26,648	—	—
Issuance of common stock for license agreement	—	—	—	—	—	—	—	—	179,996	1,750
Repurchase of founders' units	—	—	—	—	—	—	—	—	(7,244)	—
Exchange of preferred and common units into preferred and common stock	(781,693)	(5,000)	781,693	5,000	(3,922,027)	(25,548)	(3,001,567)	(40,259)	(2,020,367)	(2,342)
Sale of Class C preferred stock, net of issuance costs of $1,567	—	—	—	—	—	—	—	—	—	—
Convertible preferred stock and contingently redeemable preferred stock exchanged for common stock	—	—	(781,693)	(5,000)	—	—	—	—	—	—
Common stock ($.0001 par) exchanged for common stock ($.001 par)	—	—	—	—	—	—	—	—	—	—
Issuance of common stock in the Merger	—	—	—	—	—	—	—	—	—	—
Exercise of stock options	—	—	—	—	—	—	—	—	—	—
Issuance of restricted stock	—	—	—	—	—	—	—	—	—	—
Cancellation of restricted stock	—	—	—	—	—	—	—	—	—	—
Equity-based compensation expense	—	—	—	—	—	—	—	—	—	—
Effect of adoption of ASU 2016-09	—	—	—	—	—	—	—	—	—	—
Unrealized gain/(loss) on securities	—	—	—	—	—	—	—	—	—	—
Net loss	—	—	—	—	—	—	—	—	—	—
Balance at December 31, 2017	—	$ —	—	$ —	—	$ —	—	$ —	—	$ —

See accompanying notes to the audited consolidated financial statements.

SYNLOGIC, INC. AND SUBSIDIARIES

Consolidated Statements of Contingently Redeemable Preferred Equity and Stockholders' Equity (continued)

(In thousands, except share and unit amounts)

	Series A convertible preferred stock		Series B convertible preferred stock		Series C convertible preferred stock		Common shares $0.0001 par	
	Shares	Amount					Shares	Amount
Balance at December 31, 2015	—	—	—	—	—	—	—	—
Sale of Class A-3 preferred units, net of issuance costs of $0	—	—	—	—	—	—	—	—
Sale of Class B preferred units, net of issuance costs of $317	—	—	—	—	—	—	—	—
Repurchase of founders' units	—	—	—	—	—	—	—	—
Equity-based compensation expense	—	—	—	—	—	—	—	—
Net loss	—	—	—	—	—	—	—	—
Balance at December 31, 2016	—	—	—	—	—	—	—	—
Sale of Class B preferred units, net of issuance costs of $18	—	—	—	—	—	—	—	—
Issuance of common stock for license agreement	—	—	—	—	—	—	—	—
Repurchase of founders' units	—	—	—	—	—	—	—	—
Exchange of preferred and common units into preferred and common stock	3,922,027	25,548	3,001,567	40,259	—	—	2,020,367	—
Sale of Class C preferred stock, net of issuance costs of $1,567	—	—	—	—	2,882,679	40,433	—	—
Convertible preferred stock and contingently redeemable preferred stock exchanged for common stock	(3,922,027)	(25,548)	(3,001,567)	(40,259)	(2,882,679)	(40,433)	—	—
Common stock ($.0001 par) exchanged for common stock ($.001 par)	—	—	—	—	—	—	(2,714,694)	—
Issuance of common stock in the Merger	—	—	—	—	—	—	—	—
Exercise of stock options	—	—	—	—	—	—	—	—
Issuance of restricted stock	—	—	—	—	—	—	697,292	—
Cancellation of restricted stock	—	—	—	—	—	—	(2,965)	—
Equity-based compensation expense	—	—	—	—	—	—	—	—
Effect of adoption of ASU 2016-09	—	—	—	—	—	—	—	—
Unrealized gain/(loss) on securities	—	—	—	—	—	—	—	—
Net loss	—	—	—	—	—	—	—	—
Balance at December 31, 2017	—	$ —	—	$ —	—	$ —	—	$ —

See accompanying notes to the consolidated financial statements.

SYNLOGIC, INC. AND SUBSIDIARIES

Consolidated Statements of Contingently Redeemable Preferred Equity and Stockholders' Equity (continued)

(In thousands, except share and unit amounts)

	Common shares $0.001 par		Additional paid-in capital	Unrealized gain/(loss) on securities	Accumulated deficit	Total equity
	Shares	Amount				
Balance at December 31, 2015	—	—	—	—	(10,294)	977
Sale of Class A-3 preferred units, net of issuance costs of $0	—	—	—	—	—	14,500
Sale of Class B preferred units, net of issuance costs of $317	—	—	—	—	—	13,611
Repurchase of founders' units	—	—	—	—	—	—
Equity-based compensation expense	—	—	—	—	—	369
Net loss	—	—	—	—	(20,954)	(20,954)
Balance at December 31, 2016	—	—	—	—	(31,248)	8,503
Sale of Class B preferred units, net of issuance costs of $18	—	—	—	—	—	26,648
Issuance of common stock for license agreement	—	—	—	—	—	1,750
Repurchase of founders' units	—	—	—	—	—	—
Exchange of preferred and common units into preferred and common stock	—	—	2,342	—	—	—
Sale of Class C preferred stock, net of issuance costs of $1,567	—	—	—	—	—	40,433
Convertible preferred stock and contingently redeemable preferred stock exchanged for common stock	10,587,966	10	111,230	—	—	5,000
Common stock ($.0001 par) exchanged for common stock ($.001 par)	2,714,694	3	(3)	—	—	—
Issuance of common stock in the Merger	2,979,836	3	40,430	—	—	40,433
Exercise of stock options	386	—	5	—	—	5
Issuance of restricted stock	2,884	—	—	—	—	—
Cancellation of restricted stock	(13,149)	—	—	—	—	—
Equity-based compensation expense	—	—	2,652	—	—	2,652
Effect of adoption of ASU 2016-09	—	—	29	—	(29)	—
Unrealized gain/(loss) on securities	—	—	—	(9)	—	(9)
Net loss	—	—	—	—	(40,377)	(40,377)
Balance at December 31, 2017	16,272,617	$ 16	$ 156,685	$ (9)	$ (71,654)	$ 85,038

See accompanying notes to the consolidated financial statements.

SYNLOGIC, INC. AND SUBSIDIARIES

Consolidated Statements of Cash Flows

(In thousands)

	Year Ended December 31, 2017	Years Ended December 31, 2016
Cash flows from operating activities:		
Net loss	$ (40,377)	$ (20,954)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	2,310	692
Loss on disposal of property and equipment	5	4
Equity-based compensation expense	2,652	369
Common shares issued for license acquisition	1,750	—
Accretion/amortization of investment securities	(6)	—
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(87)	(1,341)
Accounts payable and accrued expenses	4,071	1,329
Deferred revenue	(444)	(444)
Deferred rent	(1,121)	21
Other assets	192	(84)
Net cash, cash equivalents and restricted cash used in operating activities	(31,055)	(20,408)
Cash flows from investing activities:		
Net assets acquired in reverse merger, net of transaction costs	40,433	—
Purchases of marketable securities	(51,438)	—
Proceeds from maturity of marketable securities	22,850	—
Proceeds from sale of property and equipment	11	8
Purchases of property and equipment	(2,578)	(1,841)
Net cash, cash equivalents and restricted cash provided by (used) in investing activities	9,278	(1,833)
Cash flows from financing activities:		
Payments on capital lease obligations	(408)	(80)
Proceeds from exercise of stock options and grant of restricted stock	5	—
Proceeds from sale of convertible preferred stock, net of issuance costs	40,433	—
Proceeds from sale of preferred units, net of issuance costs	26,648	30,728
Net cash, cash equivalents and restricted cash provided by financing activities	66,678	30,648
Net increase in cash, cash equivalents and restricted cash	44,901	8,407
Cash, cash equivalents and restricted cash at beginning of period	14,636	6,229
Cash, cash equivalents and restricted cash at end of period	$ 59,537	$ 14,636
Supplemental disclosure of non-cash investing activities:		
Landlord funded allowance for tenant improvements	$ 4,961	$ 1,295
Adjustment for property and equipment purchases included in accounts payable and accrued expenses	$ 147	$ 41
Supplemental disclosure of non-cash financing activities:		
Cash paid for interest	$ 35	$ 8
Purchase under capital lease	$ 918	$ 367
Prior period adjustment related to the adoption of ASU 2016-09	$ 29	$ —

See accompanying notes to the consolidated financial statements.

(1) Nature of Business

Organization

Synlogic, Inc., together with its wholly owned and consolidated subsidiaries ("Synlogic" or the "Company") is a clinical-stage biopharmaceutical company focused on advancing its drug discovery and development platform for Synthetic Biotic™ medicines, which are designed using synthetic biology to genetically reprogram beneficial microbes to treat metabolic and inflammatory diseases and cancer. Synthetic Biotic medicines are generated from Synlogic's proprietary drug discovery and development platform applying the principles and tools of synthetic biology to engineer beneficial probiotic bacteria to perform or deliver critical therapeutic functions. As living medicines, Synthetic Biotic medicines can be designed to sense a local disease context within a patient's body and to respond by metabolizing a toxic substance, compensating for missing or damaged metabolic pathways in patients, or by delivering combinations of therapeutic factors. Synlogic's goal is to lead in the discovery and development of Synthetic Biotic therapies as living medicines capable of robust and precise pathway complementation and delivery of therapeutic benefit.

Synlogic, Inc. ("Private Synlogic" when referred to prior to the Merger (as defined below)) was founded and began operations on March 14, 2014, as TMC Therapeutics, Inc., located in Cambridge, Massachusetts. On July 15, 2014, TMC Therapeutics, Inc. changed its name to Synlogic, Inc. On July 2, 2015, the common and preferred stockholders of Private Synlogic executed the Synlogic, LLC Contribution Agreement (the "Contribution Agreement"), pursuant to which such common and preferred stockholders contributed such stockholders' equity interests in Private Synlogic in exchange for common and preferred units in a newly formed parent company named Synlogic, LLC. In addition, Synlogic IBDCo, Inc. ("IBDCo") was formed as a subsidiary of Synlogic, LLC ("2015 Reorganization"). In conjunction with the 2015 Reorganization, Private Synlogic entered into a license, option and merger agreement with AbbVie S.à.r.l. ("AbbVie"), for the development of treatments for inflammatory bowel disease ("IBD") (Note 11).

In May 2017, Private Synlogic completed a reorganization ("2017 Reorganization") pursuant to which Synlogic, LLC merged with and into Private Synlogic, with Private Synlogic continuing as the surviving corporation. Pursuant to the 2017 Reorganization, the common units and preferred units of Synlogic, LLC, together consisting of Class A preferred units, contingently redeemable Class A preferred units and Class B preferred units, were exchanged for common stock and preferred stock of Private Synlogic, respectively. Additionally, Private Synlogic issued equity awards under the Synlogic 2017 Stock Incentive Plan ("2017 Plan") to replace the canceled incentive units pursuant to the termination of the Synlogic, LLC 2015 Equity Incentive Plan ("2015 LLC Plan") (Note 10).

On August 28, 2017, Synlogic, Inc., formerly known as Mirna Therapeutics, Inc. (NASDAQ: MIRN) ("Mirna"), completed its business combination with Private Synlogic in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated as of May 15, 2017, by and among Mirna, Meerkat Merger Sub, Inc. ("Merger Sub"), and Private Synlogic (the "Merger Agreement"), pursuant to which Merger Sub merged with and into Private Synlogic, with Private Synlogic surviving as a wholly owned subsidiary of Mirna (the "Merger"). On August 25, 2017, in connection with, and prior to the completion of, the Merger, Mirna effected a 1:7 reverse stock split of its common stock (the "Reverse Stock Split"), and on August 28, 2017, immediately after completion of the Merger, Mirna changed its name to "Synlogic, Inc." (NASDAQ: SYBX) (Note 3). Pursuant to the terms of the Merger Agreement and after giving effect to the Reverse Stock Split, at the effective time of the Merger (the "Effective Time"), each outstanding share of Private Synlogic capital stock was converted into the right to receive approximately 0.5532 shares of Mirna common stock (the "Exchange Ratio"). In addition, at the Effective Time, Mirna assumed all outstanding options to purchase shares of Private Synlogic common stock, which were exchanged for options to purchase shares of Mirna common stock, in each case appropriately adjusted based on the Exchange Ratio. Mirna also assumed the 2017 Plan. Immediately after the Merger, there were 16,282,496 shares of common stock outstanding.

The Company operates in one operating segment: the discovery and development of Synthetic Biotic medicines. The Company's chief executive officer, as chief operating decision maker, manages and allocates resources to the operations of the Company on a total company basis. Since incorporation, the Company has devoted substantially all of its efforts to the research and development of its product candidates.

Risks and Uncertainties

At December 31, 2017, the Company had approximately $87.0 million in cash, cash equivalents, and marketable securities, excluding approximately $1.1 million of restricted cash, and an accumulated deficit of approximately $71.7 million. Since its inception through December 31, 2017, the Company has primarily financed its operations through the issuance of preferred stock, the AbbVie collaboration, and the Merger. In the absence of positive cash flows from operations, the Company is highly dependent on its ability to find additional sources of funding in the form of debt or equity financing. The Company secured new funding from the sale of Class B preferred units in March 2017, and the sale of Series C convertible preferred stock in May 2017, generating approximately $26.6 million and $40.4 million, respectively in net proceeds. Additionally, the Company received approximately $40.4 million in net proceeds from the Merger. As a result of the Merger proceeds and the proceeds from the Series C and Class B financing rounds in 2017, management believes that the Company has sufficient cash to fund its operations through at least twelve months from the issuance of these financial statements.

As an early-stage company, the Company is subject to a number of risks common to other life science companies, including, but not limited to, raising additional capital, development by its competitors of new technological innovations, risk of failure in preclinical and clinical studies, safety and efficacy of its product candidates in clinical trials, the risk of relying on external parties such as contract research organizations ("CROs") and contract manufacturing organizations ("CMOs"), the regulatory approval process, market acceptance of the Company's products once approved, lack of marketing and sales history, dependence on key personnel and protection of proprietary technology. The Company's therapeutic programs are currently pre-commercial, spanning discovery through early development and will require significant additional research and development efforts, including extensive preclinical and clinical testing and regulatory approval, prior to commercialization of any product candidates. These efforts require significant amounts of additional capital, adequate personnel, infrastructure, and extensive compliance-reporting capabilities. There can be no assurance that the Company's research and development will be successfully completed, that adequate protection for the Company's intellectual property will be obtained, that any products developed will obtain necessary regulatory approval or that any approved products will be commercially viable. Even if the Company's product development efforts are successful, it is uncertain when, if ever, the Company will generate revenue from product sales. The Company may never achieve profitability, and unless and until it does, it will continue to need to raise additional capital or obtain financing from other sources, such as strategic collaborations or partnerships.

(2) Summary of Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States ("U.S.") ("U.S. GAAP" or "GAAP").

Principles of Consolidation

The accompanying consolidated financial statements include the accounts of Synlogic and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in accordance with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of expenses during the reporting period. On an on-going basis, the Company's management evaluates its estimates, including those related to revenue recognition, income taxes including the valuation allowance for deferred tax assets, research and development, accrued expenses, contingencies and equity-based compensation. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable, the results of which form the basis for making judgments about the carrying values of assets and liabilities. Actual results could differ from those estimates. Changes in estimates are reflected in reported results in the period in which they become known.

Cash Equivalents

The Company considers all highly liquid investment instruments with a remaining maturity when purchased of three months or less to be cash equivalents. Investments qualifying as cash equivalents primarily consist of money market funds and corporate debt securities. Cash equivalents are stated at cost plus accrued interest, which approximates fair value. The amount of cash equivalents included in cash and cash equivalents was approximately $32.7 million at December 31, 2017. The Company did not have cash equivalents at December 31, 2016.

Reclassifications

Restricted cash has been presented in the beginning and opening balances of cash, cash equivalents and restricted cash to conform with the adoption of ASU 2016-18 – Statement of Cash Flows (Topic 230): Restricted Cash.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk include amounts held as cash, cash equivalents, marketable securities and restricted cash. The Company uses high quality, accredited financial institutions to maintain its balances, and accordingly, such funds are subject to minimal credit risk. The Company has not experienced any losses in such accounts and management believes that the Company is not exposed to significant credit risk due to the financial position of the depository institutions in which those deposits are held. The Company has no financial instruments with off-balance sheet risk of loss.

Restricted Cash

The Company held cash of approximately $1.0 million at December 31, 2017 in a letter of credit to secure its lease at the 301 Binney Street facility. In addition, the Company held cash of $50,000 at December 31, 2017 and 2016 in a separate restricted bank account as collateral for the Company's credit cards. The Company has classified these deposits as long-term restricted cash on its balance sheet.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the statement of financial position that sum to the total of the same such amounts shown in the statement of cash flows (in thousands).

	December 31, 2017	December 31, 2016
Cash and cash equivalents	$ 58,440	$ 14,586
Restricted cash included in other long-term assets	1,097	50
Total cash, cash equivalents, and restricted cash shown in the consolidated statement of cash flows	$ 59,537	$ 14,636

Fair Value

The Company is required to disclose information on all assets and liabilities reported at fair value that enables an assessment of the inputs used in determining the reported fair values. ASC Topic 820, Fair Value Measurements and Disclosures, establishes a fair value hierarchy for those instruments measured at fair value that distinguishes between assumptions based on market data (observable inputs) and the Company's own assumptions (unobservable inputs). The hierarchy consists of three levels:

- Level 1 – Utilize observable inputs such as quoted prices in active markets for identical assets or liabilities;
- Level 2 – Utilize data points that are either directly or indirectly observable, such as quoted prices, interest rates and yield curves;
- Level 3 – Utilize unobservable data points in which there is little or no market data, which require the Company to develop its own assumptions for the asset or liability.

The Company evaluates transfers between levels at the end of each reporting period. There were no transfers of assets or liabilities between Level 1, Level 2 or Level 3 during the year ended December 31, 2017. The Company did not hold investment securities during the year ended December 31, 2016.

Available-for-Sale Securities

The Company classifies all short-term investments with an original maturity when purchased of greater than three months as available-for-sale. Available-for-sale securities are carried at fair value, with the unrealized gains and losses reported in other comprehensive income (loss). The amortized cost of debt securities in this category is adjusted for amortization of premiums and accretion of discounts to maturity. Such amortization is included in interest and investment income. Realized gains and losses, and declines in value judged to be other than temporary on available-for-sale securities, are included in interest and investment income.

The cost of securities sold is based on the specific identification method. Interest and dividends on securities classified as available-for-sale are included in interest and investment income. To determine whether an other-than-temporary impairment exists, the Company considers whether it has the ability and intent to hold the investment until a market price recovery, and whether evidence indicating the recoverability of the cost of the investment outweighs evidence to the contrary. There were no other-than-temporary impairments during the year ended December 31, 2017. The Company did not hold investment securities during the year ended December 31, 2016.

Property and Equipment

Property and equipment, including leasehold improvements, are recorded at cost and depreciated over their estimated useful lives using the straight-line method. Repairs and maintenance costs are expensed as incurred, whereas major improvements are capitalized as additions to property and equipment.

Depreciation begins at the time the asset is placed in service. Depreciation is provided over the following estimated useful lives:

Asset classification	Useful life
Computer and office equipment	3 years
Furniture and fixtures	5 years
Laboratory equipment	5 years
Leasehold improvements	Lesser of useful life or remaining lease term

Impairment of Long-Lived Assets

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. When such events occur, the Company compares the carrying amounts of the assets to their undiscounted expected future cash flows. If this comparison indicates that there is impairment, the amount of impairment is calculated as the difference between the carrying value and fair value of the asset. To date, no such impairments have been recognized.

Rent Expense

The Company's leases for both the 301 Binney Street facility and the 200 Sidney Street facility in Cambridge, Massachusetts provide for a rent-free period as well as fixed increases in minimum annual rental payments. The total amount of rental payments due over the lease term is being charged to rent expense on a straight-line basis over the term of the lease. Tenant improvement allowances and other incentives are recorded as deferred rent and amortized as a reduction of periodic rent expense, over the term of the lease. Deferred rent consists of the difference between cash payments and the recognition of rent expense on a straight-line basis for the Company's facilities. The Company began to accelerate the recognition of deferred rent on its 200 Sidney Street facility when it agreed to terminate the lease in July 2017.

Research and Development Costs

Costs incurred in the research and development of the Company's product candidates are expensed as incurred. The Company defers and capitalizes nonrefundable advance payments made by the Company for research and development activities until the related goods are received or the related services are performed.

Research and development expenses are comprised of costs incurred in performing research and development activities, including salary and benefits, equity-based compensation expense, laboratory supplies and other direct expenses, facilities expenses, overhead expenses, contractual services and other outside expenses.

When third-party service providers' billing terms do not coincide with the Company's period-end, the Company is required to make estimates of its obligations to those third parties, including clinical trial costs, contractual services costs and costs for supply of its drug candidates, incurred in a given accounting period and record accruals at the end of the period. The Company bases its estimates on its knowledge of the research and development programs, services performed for the period and the expected duration of the third-party service contract, where applicable.

Revenue recognition

The Company generates revenue through a collaboration and license arrangement with a strategic partner for the development and commercialization of product candidates.

The Company recognizes revenue in accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") Topic 605, Revenue Recognition ("ASC 605"). Accordingly, revenue is recognized for each unit of accounting when all of the following criteria are met:

- Persuasive evidence of an arrangement exists;
- Delivery has occurred or services have been rendered;
- The seller's price to the buyer is fixed or determinable; and
- Collectability is reasonably assured.

Amounts received prior to satisfying the revenue recognition criteria are recorded as deferred revenue in the Company's consolidated balance sheets. Amounts expected to be recognized as revenue within the 12 months following the balance sheet date are classified as current deferred revenue. Amounts not expected to be recognized as revenue within the 12 months following the balance sheet date are classified as deferred revenue, net of current portion.

The Company evaluates collaboration agreements with respect to FASB ASC Topic 808, *Collaborative Arrangements*, considering the nature and contractual terms of the arrangement and the nature of its business operations to determine the classification of the transactions. When the Company is an active participant in the activity and exposed to significant risks and rewards dependent on the commercial success of the collaboration, it will record its transactions on a gross basis in the consolidated financial statements and describe the rights and obligations under the collaborative arrangement in the notes to the consolidated financial statements.

Multiple-Element Arrangements

The Company evaluates multiple-element arrangements based on the guidance in FASB ASC Topic 605-25, *Revenue Recognition – Multiple-Element Arrangements* ("ASC 605-25"). Pursuant to this guidance, the Company identifies the deliverables included in the arrangement and determines whether the individual deliverables have value to the customer on a stand-alone basis and represent separate units of accounting or whether they must be accounted for as a combined unit of accounting. This evaluation requires management to make judgments about the individual deliverables and whether such deliverables are separable from the other aspects of the contractual relationship. Deliverables are considered separate units of accounting provided that: (i) the delivered item(s) has value to the customer on a stand-alone basis and (ii) if the arrangement includes a general right of return relative to the delivered item(s), delivery or performance of the undelivered item(s) is considered probable and substantially in the control of the Company. In assessing whether an item has stand-alone value, the Company considers factors such as the research, manufacturing and commercialization capabilities of the collaboration partner; the retention of any key rights by the Company; and the availability of the associated expertise in the general marketplace. In addition, the Company considers whether the collaboration partner can use the other deliverable(s) for their intended purpose without the receipt of the remaining element(s), whether the value of the deliverable is dependent on the undelivered item(s) and whether there are other vendors that can provide the undelivered element(s).

In situations where the Company has identified multiple units of accounting, the arrangement consideration that is fixed or determinable is allocated among the separate units of accounting using the relative selling price method. The Company determines the selling price of a unit of accounting following the hierarchy of evidence prescribed by ASC 605-25. Accordingly, the Company determines the estimated selling price for units of accounting within each arrangement using vendor-specific objective evidence ("VSOE") of selling price, if available; third-party evidence ("TPE") of selling price if VSOE is not available; or best estimate of selling price ("BESP") if neither VSOE nor TPE is available.

Then, the applicable revenue recognition criteria in ASC 605-25 are applied to each of the separate units of accounting to determine the appropriate period and pattern of recognition. The Company recognizes arrangement consideration allocated to each unit of accounting when all of the revenue recognition criteria in ASC 605-25 are satisfied for that particular unit of accounting. The Company will recognize as revenue, upon delivery, arrangement consideration attributed to deliverables that have stand-alone value from the other deliverables to be provided in an arrangement. For deliverables that do not have stand-alone value from the other deliverables to be provided in an arrangement, revenue is recognized over the Company's estimated performance period as the arrangement would be accounted for as a single unit of accounting.

If there is no discernible pattern of performance and/or objectively measurable performance measures do not exist, then the Company recognizes revenue under the arrangement for the single unit of accounting on a straight-line basis over the period the Company is expected to complete its performance obligations. Alternatively, if the pattern of performance in which the service is provided to the customer can be determined and objectively measurable performance measures exist, then the Company recognizes revenue under the arrangement using the proportional performance method. Revenue recognized is limited to the lesser of the cumulative amount of payments received or the cumulative amount of revenue earned, as determined using the straight-line method or proportional performance method, as applicable.

Milestones

Contingent consideration from research and development activities that is earned upon the achievement of a substantive milestone is recognized in its entirety in the period in which the milestone is achieved. At the inception of an arrangement that includes milestone payments, the Company evaluates whether each milestone is substantive and at risk to both parties on the basis of the contingent nature of the milestone. This evaluation includes an assessment of whether: (i) the consideration is commensurate with either the Company's performance to achieve the milestone or the enhancement of the value of the delivered item(s) as a result of a specific outcome resulting from the Company's performance to achieve the milestone, (ii) the consideration relates solely to past performance and (iii) the consideration is reasonable relative to all of the deliverables and payment terms within the arrangement. The Company evaluates factors such as the scientific, clinical, regulatory, commercial and other risks that must be overcome to achieve the respective milestone and the level of effort and investment required to achieve the respective milestone in making this assessment. There is considerable judgment involved in determining whether a milestone satisfies all of the criteria required to conclude that a milestone is substantive. The Company recognizes revenue associated with substantive milestones in accordance with FASB ASC Topic 605-28, *Revenue Recognition – Milestone Method* upon successful accomplishment of each milestone, assuming all other revenue recognition criteria are met. Milestones that are not considered substantive would be recognized as revenue over the remaining period of performance, assuming all other revenue recognition criteria are met.

Equity-Based Compensation

The Company measures equity-based compensation to employees and directors based on the grant date fair value of the awards and recognizes the associated expense in the financial statements over the requisite service period of the award, which is generally the vesting period.

Equity-based compensation costs for nonemployee awards are recognized as services are provided, which is generally the vesting period, on a straight-line basis. The measurement date for nonemployee awards is generally the date the performance of services required from the nonemployee is complete. The Company believes that the fair value of the equity is more reliably measurable than the fair value of the services rendered. The fair value of the award granted to a nonemployee is remeasured at each reporting date until performance is completed with any increase or decrease in fair value recorded as equity-based compensation expense.

Prior to the Merger in August 2017, the Company's Board of Directors determined the estimated per share fair market value of the common stock and common units at various dates considering contemporaneous valuations performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants Practice Aid, *Valuation of Privately-Held Company Equity Securities Issued as Compensation*, or the Practice Aid. The fair market value of the common stock and common units was determined by the Board of Directors at each award grant date based on assumptions, each of which are subjective and generally require judgement and estimation by management, including results obtained from independent third-party valuations, the Company's financial position and historical financial performance, the status of technological developments within the Company's product candidates, the composition and ability of the research and management team, an evaluation or benchmark of the Company's competition, the business climate in the marketplace, the illiquid nature of the common stock and common units, arm's length sales of the Company's capital stock (including convertible preferred stock), the effect of the rights and preferences of the preferred stock, and the prospects of a liquidity event.

The fair value of each option was estimated on the date of grant or remeasurement using the Black-Scholes option-pricing model. Expected volatility for the Company's common stock was determined based on an average of the historical volatility of a peer-group of similar public companies. The expected term of options granted for employees was calculated using the simplified method, which represented the average of the contractual term of the option and the weighted-average vesting period of the option. The assumed dividend yield is based upon the Company's expectation of not paying dividends in the foreseeable future. The risk-free interest rate is based upon the U.S. Treasury yield curve commensurate with the expected term at the time of grant or remeasurement. Forfeitures are recognized as they occur as allowed under ASU 2016-09.

The Company's Board of Directors estimated the threshold price for each incentive unit issued by Synlogic, LLC, which is the price at which an incentive unit would have had a liquidation value of zero, considering the fair value of the Company's assets at the date of grant and performed an analysis to determine the per unit amount that a holder would have received upon a distribution event. In determining the fair value of its assets, the Company relied on independent third-party valuations, which take into account a variety of factors, including the Company's financial position and historical financial performance, the status of technological developments within the Company's products, the composition and ability of the research and management team, an evaluation or benchmark of the Company's competition, the business climate in the marketplace, the illiquid nature of the common units and incentive units, arm's-length sales of the Company's equity, the effect of the rights and preferences of the preferred unit holders, and the prospects of a liquidity event, among others.

The fair value of each incentive unit award was estimated on the date of grant or remeasurement using the Black-Scholes with barrier option-pricing model. Assumptions utilized in the model for valuing the incentive units including expected volatility, dividend yield and risk-free interest rate were arrived at in the same manner as those utilized for the stock option model described above. Forfeitures are treated in the manner described above. Incentive units did not have an expiration date, thus, the expected term of incentive units granted was determined based on the probability-weighted estimated term to a liquidity event.

The Company records the expense for equity grants subject to performance-based milestone vesting over the remaining service period when management determines that achievement of the milestone is probable. Management evaluates when the achievement of a performance-based milestone is probable based on the relative satisfaction of the performance conditions as of the reporting date.

The Company classifies equity-based compensation expense in its consolidated statements of operations in the same manner in which the award recipient's payroll costs are classified or in which the award recipients' service payments are classified.

Income Taxes

The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the financial statements or in the Company's tax returns. Deferred taxes are determined based on the difference between the financial reporting and tax basis of assets and liabilities using enacted tax rates in effect in the years in which the differences are expected to reverse. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes. The Company assesses the likelihood that its deferred tax assets will be recovered from future taxable income and, to the extent it believes based upon the weight of available evidence, that it is more likely than not that all or a portion of deferred tax assets will not be realized, a valuation allowance is established through a charge to income tax expense. Potential for recovery of deferred tax assets is evaluated by estimating the future taxable profits expected and considering prudent and feasible tax planning strategies.

Uncertain tax positions represent tax positions for which reserves have been established. The Company accounts for uncertainty in income taxes recognized in the consolidated financial statements by applying a two-step process to determine the amount of tax benefit to be recognized. First, the tax position must be evaluated to determine the likelihood that it will be sustained upon external examination by the taxing authorities. If the tax position is deemed more likely than not to be sustained, the tax position is then assessed to determine the amount of benefit to be recognized in the financial statements. The amount of the benefit that may be recognized is the largest amount that has a greater than 50% likelihood of being realized upon ultimate settlement. The provision for income taxes includes the effects of any resulting tax reserves, or unrecognized tax benefits, that are considered appropriate as well as the related net interest and penalties.

Net Loss Per Share/Unit

Basic net loss per share/unit is computed using the weighted-average number of shares of common stock/units outstanding during the period. Diluted net loss per share/unit is computed using the sum of the weighted-average number of shares of common stock/units outstanding during the period and if dilutive, the weighted-average number of potential shares of common stock/units, including unvested restricted common stock/units and outstanding stock options.

The Company computed basic and diluted net loss per shares/unit using the two-class method, which gives effect to the impact of the outstanding participating securities. As the twelve months ended December 31, 2017 and 2016 resulted in net losses attributable to common stockholders/unit holders, there is no income allocation required under the two-class method or dilution attributed to weighted-average shares outstanding in the calculation of diluted net loss per share/unit because the preferred stockholders/unit holders do not participate in losses of the Company. Accordingly, for periods in which the Company reports a net loss attributable to common stockholders/unit holders, diluted net loss per share/unit attributable to common stockholders/unit holders is the same as basic net loss per share/unit attributable to common stockholders/unit holders, since dilutive common stock/units are not assumed to have been issued if their effect is anti-dilutive.

As the 2017 Reorganization resulted in a one for one conversion of preferred units for preferred stock and common units for common stock, the conversion was not substantive for the purposes of this calculation and the weighted average was calculated as if outstanding equity was outstanding from the beginning of the period presented.

Additionally, at the Effective Time of the Merger, the Company issued shares of its common stock to Private Synlogic stockholders, at the Exchange Ratio of 0.5532 shares of common stock, after taking into account the Reverse Stock Split, in exchange for each share of Private Synlogic preferred and common stock outstanding immediately prior to the Merger. The Exchange Ratio was calculated by a formula pursuant to the Merger Agreement. For the purposes of calculating net loss per share, the Exchange Ratio was applied retroactively to all periods presented.

Segment Information

Operating segments are defined as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision maker, or decision-making group, in deciding how to allocate resources and in assessing performance. The Company operates in one operating segment: discovery and development of synthetic biology therapeutics for the treatment of rare, infectious and other diseases. The Company's chief executive officer, as chief operating decision maker, manages and allocates resources to the operations of the Company on a total company basis. All of the Company's equipment, leasehold improvements and other fixed assets are physically located within the United States, and all agreements with its partners are denominated in U.S. dollars, except where noted.

Recently Adopted Accounting Pronouncements

In August 2014, the FASB issued ASU 2014-15—Presentation of Financial Statements—Going Concern ("ASU 2014-15") on disclosure of uncertainties about an entity's ability to continue as a going concern. This guidance addresses management's responsibility in evaluating whether there is substantial doubt about a company's ability to continue as a going concern and to provide related footnote disclosures. The guidance is effective for fiscal years ending after December 15, 2016 and for annual periods and interim periods thereafter, with early adoption permitted. The Company adopted ASU 2014-15 as of December 31, 2016 and it did not have a material effect on its consolidated financial statements.

In November 2015, the FASB issued ASU 2015-17—Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes, that provides guidance on the presentation of deferred income taxes which requires deferred tax assets and liabilities, along with related valuation allowances, to be classified as noncurrent on the balance sheet. As a result, each tax jurisdiction will now only have one net noncurrent deferred tax asset or liability. The new guidance does not change the existing requirement that prohibits offsetting deferred tax liabilities from one jurisdiction against deferred tax assets of another jurisdiction. The new guidance is effective for financial statements issued for annual periods beginning after December 15, 2016, and interim periods within those annual periods, with early application permitted. The amendments may be applied either prospectively to all deferred tax liabilities and assets or retrospectively to all periods presented. The Company adopted ASU 2015-17 for the fiscal year ended December 31, 2017 and it did not have a material impact on its financial statements.

In March 2016, the FASB issued ASU 2016-09—Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting ("ASU 2016-09"). The amendments in ASU 2016-09 are to simplify several aspects of the accounting for stock-based payment transactions including the income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. In addition, companies will now have to elect whether to account for forfeitures on share-based payments by (1) recognizing forfeitures of awards as they occur or (2) estimating the number of awards expected to be forfeited and adjusting the estimate when it is likely to change, as is currently required. The Company adopted ASU 2016-09 on April 1, 2017 on a modified retrospective basis, and elected to recognize forfeitures as they occur. The Company recorded an insignificant cumulative effect adjustment as a result of the adoption of this amendment. The adoption did not have a material impact on the Company's condensed consolidated financial statements and related disclosures.

In November 2016, the FASB issued ASU 2016-18 – Statement of Cash Flows (Topic 230): Restricted Cash, which requires companies to include cash and cash equivalents that have restrictions on withdrawal or use in total cash and cash equivalents on the statement of cash flows. This ASU is effective for public business entities for annual and interim periods in fiscal years beginning after December 15, 2017, with early adoption permitted. The Company elected to early adopt this guidance on December 31, 2017. This guidance was applied using a retrospective transition method for each period and, accordingly, the Company included approximately $1.0 million and $0.1 million of restricted cash in cash and cash equivalents as of the beginning and ending periods in the accompanying consolidated financial statements as of December 31, 2017, 2016, respectively.

In January 2017, the FASB issued ASU 2017-01, Business Combinations (Topic 805) Clarifying the Definition of a Business ("ASU 2017-01"), which clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The definition of a business affects many areas of accounting including acquisitions, disposals, goodwill, and consolidation. The Company adopted ASU 2017-01 on April 1, 2017 and followed the guidance when determining the accounting treatment of its Merger with Mirna.

Recently Issued Accounting Pronouncements

In May 2014, the FASB issued ASU 2014-09—Revenue from Contracts with Customers (Topic 606), ("ASU 2014-09") which supersedes all existing revenue recognition requirements, including most industry-specific guidance. In addition, the FASB recently issued ASUs 2016-10 and 2016-12, which provide clarifying amendments to ASU 2014-09. This standard is based on the principle that an entity should recognize revenue when it transfers goods or services to customers in an amount that reflects the consideration that the company expects to receive. This standard also requires additional disclosure about the nature, amount, timing and uncertainty of assets recognized from costs incurred to fulfill a contract. It will be effective for annual reporting periods beginning after December 15, 2017, including interim periods within those annual periods. Early adoption is permitted any time after the original effective date, which for the Company is January 1, 2017. Entities have the option of using either a full retrospective or a modified retrospective approach for the adoption of the new standard.

The Company will adopt this standard as of January 1, 2018 under the modified retrospective approach.

Under ASC 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that an entity determines are within the scope of ASC 606, the entity performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. ASC 606 also impacts certain other areas, such as the accounting for costs to obtain or fulfill a contract. The standard also requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers.

The Company is assessing but has not yet completed its assessment of the impact of the adoption of this standard on its consolidated financial statements. Currently, the Company anticipates a potential impact on the revenue recognition method used to recognize revenue for the identified performance obligations under the AbbVie Collaboration Agreement as well as the recognition of a portion of its milestone revenue prior to achievement of the milestone. The expected impact is further described below. Estimated impacts from the adoption of this standard could differ upon the final adoption and implementation of the standard.

With respect to the AbbVie Collaboration Agreement, the Company identified three deliverables that are treated as a single unit of accounting under the provisions of ASC 605. The Company expects the agreement will continue to be have a single performance obligation under the provisions of ASC 606. However, it currently expects that the timing and pattern of revenue recognition under step (v) above will differ from the pattern of revenue recognition under ASC 605.

The Company expects the accounting for contingent milestone payments under its collaboration agreements to change under ASC 606. ASC 606 does not contain guidance specific to milestone payments, thereby requiring contingent milestone payments to be considered in accordance with the overall model of ASC 606. Revenue from contingent milestone payments may begin to be recognized earlier under ASC 606 than under ASC 605, based on an assessment of the probability of achievement of the milestone event and the likelihood of a significant reversal of such milestone revenue at each reporting date. This assessment may result in the recognition of a portion of the revenue related to contingent milestone payments before the milestone event has been achieved. Under the AbbVie Collaboration Agreement, the Company anticipates that the previously recognized $2.0 million milestone achieved and recognized in May 2017 pursuant to ASC605 will be recognized over the performance period once it becomes probable of achievement, following the pattern determined under ASC 606. Revenue from any future contingent milestone payments will be assessed for probability of achievement and recognized according to this methodology when deemed to no longer be at significant risk of reversal.

As of December 31, 2017, the Company had recognized $2.8 million of revenue under the AbbVie Collaboration Agreement since its inception. Deferred revenue related to the AbbVie Collaboration Agreement amounted to $1.1 million as of December 31, 2017, of which $0.4 million is included in current liabilities. The Company expects a change in the timing and pattern of revenue

recognition upon adoption of ASC 606 to impact the Company's accumulated deficit and deferred revenue. As a result of the adoption of ASU 2014-09, the Company anticipates an increase in its deferred revenue and an increase in its associated accumulated deficit.

ASC 606 requires more robust disclosures than required by previous guidance, including disclosures related to disaggregation of revenue into appropriate categories, performance obligations, the judgments made in revenue recognition determinations, adjustments to revenue which relate to activities from previous quarters or years, any significant reversals of revenue, and costs to obtain or fulfill contracts.

In February 2016, the FASB issued ASU 2016-02 – Leases (topic 842), which replaces the existing accounting guidance for leases. This standard requires entities that lease assets to recognize the assets and liabilities for the rights and obligations created by those leases on the balance sheet. The standard is effective for fiscal years and the interim periods within those fiscal years beginning after December 15, 2018. The guidance is required to be applied by the modified retrospective transition approach and early adoption is permitted. While the Company is currently assessing the impact that adoption of this guidance will have on its financial statements and footnote disclosures, it anticipates it will result in an increase in assets and liabilities.

In May 2017, the FASB issued ASU 2017-09, Compensation – Stock Compensation (Topic 718): Scope Modification Accounting. The new standard is intended to reduce the diversity in practice and cost and complexity when applying the guidance in Topic 718 to a change to the terms or conditions of a share-based payment award. The new standard will be effective for annual reporting periods and interim periods within those annual periods, beginning after December 15, 2017. The amendments in this update will be applied prospectively to an award modified on or after the adoption date. The adoption of this standard is not expected to have a material impact on the Company's financial position or results of operations upon adoption.

(3) Merger with Mirna Therapeutics

On August 28, 2017, Private Synlogic completed the Merger with Mirna as discussed in Note 1. For accounting purposes, Private Synlogic is considered to have acquired Mirna in the Merger. Private Synlogic was determined to be the accounting acquirer based upon the terms of the Merger and other factors including: (i) Private Synlogic stockholders owned approximately 83% of the combined company immediately following the closing of the Merger, (ii) Private Synlogic directors held five of the seven board seats in the combined company, and (iii) Private Synlogic management held all key positions in the management of the combined company. The Merger was accounted for as an asset acquisition rather than a business combination because the assets acquired and liabilities assumed by the Company do not meet the definition of a business as defined by ASU 2017-01. The net assets acquired in connection with this transaction were recorded at their estimated acquisition date fair values as of August 28, 2017, the date the Merger was completed (the "Merger Closing Date").

Under the terms of the Merger Agreement, Mirna issued shares of its common stock to Private Synlogic's stockholders, at an exchange ratio of 0.5532 shares of Mirna's common stock, after taking into account the Reverse Stock Split, for each share of Private Synlogic common stock and preferred stock outstanding immediately prior to the Merger. The Exchange Ratio was determined through arms'-length negotiations between Mirna and Private Synlogic. Mirna assumed all of the stock options outstanding under the 2017 Plan, with such stock options henceforth representing the right to purchase a number of shares of Mirna's common stock equal to 0.5532 multiplied by the number of shares of Private Synlogic common stock previously represented by such options. Mirna also assumed the 2017 Plan. The consolidated financial statements give retroactive effect to the Exchange Ratio for all periods presented.

Immediately after the Merger, there were 16,282,496 shares of the Company's common stock outstanding. At this time, the former stockholders and optionholders of Private Synlogic owned, or held rights to acquire, approximately 82.4% of the fully-diluted common stock of the Company, which for these purposes is defined as the outstanding common stock of the Company, plus "in the money" options, assuming that all "in the money" options of the Company outstanding immediately prior to the Merger were exercised on a cashless basis immediately prior to the closing of the Merger (the "Fully-Diluted Common Stock of the Company"), with Mirna's stockholders and optionholders immediately prior to the Merger owning approximately 17.6% of the Fully-Diluted Common Stock of the Company.

On the Merger Closing Date, Mirna had approximately 20.9 million shares of common stock outstanding and a market capitalization of approximately $35 million. The estimated fair value of the net assets of Mirna on August 28, 2017 was approximately $42.6 million. The fair value of the Mirna common stock on the Merger Closing Date was below the fair value of Mirna's net assets. As Mirna's net assets were predominantly comprised of cash, cash equivalents and marketable securities, partially offset by current liabilities, the fair value of Mirna's net assets as of the Merger Closing Date is considered to be the best indicator of the fair value and, therefore, the estimated preliminary purchase consideration.

All of Mirna's assets and liabilities were reflected at their fair value on the Merger Closing Date. No goodwill or intangible assets were recognized. Consistent with accounting for an asset acquisition, the Company capitalized the costs associated with the

Merger. Transaction costs primarily included bank fees and professional fees associated with legal counsel, auditors and printers. The following table shows the net assets acquired in the Merger (in thousands):

	August 28, 2017
Cash and cash equivalents	$ 14,882
Marketable securities	27,600
Interest receivable	126
Prepaid assets	112
Unrealized loss on marketable securities	5
Accounts payable and accrued expenses	(105)
Total net assets acquired	42,620
Less: Transaction costs	(2,187)
Total net assets acquired less transaction costs	$ 40,433

(4) Fair Value of Financial Instruments

The table below presents information about the Company's assets that are measured at fair value on a recurring basis as of December 31, 2017 and indicate the fair value hierarchy of the valuation techniques the Company utilized to determine such fair value, as described under Note 2*, Summary of Significant Accounting Policies*.

The Company's investment portfolio includes many fixed income securities that do not always trade on a daily basis. As a result, the pricing services used by the Company applied other available information as applicable through processes such as benchmark yields, benchmarking of like securities, sector groupings and matrix pricing to prepare evaluations. In addition, model processes were used to assess interest rate impact and develop prepayment scenarios. These models take into consideration relevant credit information, perceived market movements, sector news and economic events. The inputs into these models may include benchmark yields, reported trades, broker-dealer quotes, issuer spreads and other relevant data.

At December 31, 2017, the Company has classified assets measured at fair value on a recurring basis as follows (in thousands):

		Fair Value Measurements at Reporting Date Using		
Description	December 31, 2017	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market funds (included in cash and cash equivalents)	$ 21,301	$ 21,301	$ —	$ —
Corporate debt securities (included in cash and cash equivalents)	11,405	—	11,405	—
Corporate debt securities (included in short-term investments)	28,585	—	28,585	—
Total	$ 61,291	$ 21,301	$ 39,990	$ —

Cash equivalents, prepaid expenses and other current assets, accounts payable and accrued expenses at December 31, 2017 and December 31, 2016 are carried at amounts that approximate fair value due to their short-term maturities. Capital lease obligations at December 31, 2017 and December 31, 2016 approximate fair value as they bear interest at a rate approximating a market interest rate.

(5) Available-for-Sale Investments

The following table summarizes the available-for-sale securities held at December 31, 2017 (in thousands):

December 31, 2017	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair Value
Corporate debt securities	$ 28,593	$ 1	$ (9)	$ 28,585
Total	$ 28,593	$ 1	$ (9)	$ 28,585

The Company did not have any available-for-sale securities at December 31, 2016.

The contractual maturity of all securities held at December 31, 2017 was one year or less. There were seven investments in an unrealized loss position at December 31, 2017, none of which had been in an unrealized loss position for more than twelve months. The aggregate fair value of the securities in an unrealized loss position was approximately $19.3 million. The Company reviews its investments for other-than-temporary impairment whenever the fair value of an investment is less than amortized cost and evidence indicates that an investment's carrying amount is not recoverable within a reasonable period of time. To determine whether an impairment is other-than-temporary, the Company considers whether it has the ability and intent to hold the investment until a market price recovery and considers whether evidence indicating the cost of the investment is recoverable outweighs evidence to the contrary. The Company did not hold any securities with an other-than-temporary impairment at December 31, 2017.

Gross realized gains and losses on the sales of investments have not been material to the Company's consolidated statement of operations.

(6) Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consists of the following (in thousands):

	December 31, 2017	December 31, 2016
Prepaid insurance	$ 437	$ 71
Prepaid research and development	508	1,163
Other prepaid	321	212
Other current assets	298	31
	$ 1,564	$ 1,477

(7) Property and Equipment, net

Property and equipment, net consists of the following (in thousands):

	December 31, 2017	December 31, 2016
Laboratory equipment	$ 2,999	$ 1,534
Computer and office equipment	354	252
Furniture and fixtures	220	220
Leasehold improvements	2,308	2,308
Construction in progress	7,017	—
	12,898	4,314
Less accumulated depreciation	(3,115)	(810)
	$ 9,783	$ 3,504

At December 31, 2017 and 2016, leasehold improvements include approximately $1.3 million of lessor-paid tenant improvements for which the Company was deemed to be the accounting owner of the tenant improvements primarily because it was responsible for project cost overruns. Also, at December 31, 2017, construction in progress contained approximately $5.0 million of lessor-paid tenant improvements expected to be placed in service in February 2018, for which the Company was deemed to be the accounting owner primarily because it was responsible for project cost overruns.

In both 2017 and 2016, the Company entered into leases for certain laboratory equipment which were capital leases. The leases had either a present value of expected payments in excess of 90% of the fair value of the equipment or a bargain purchase option at the end of the lease. As such, as of December 31, 2017 and 2016, the Company had approximately $1.4 million and $0.5 million, respectively, of assets under a capital lease having accumulated depreciation of approximately $0.2 million and $0.1 million, respectively.

(8) Accrued Expenses

Accrued expenses consists of the following (in thousands):

	December 31, 2017	December 31, 2016
Payroll related	$ 1,721	$ 1,341
Professional fees	805	522
Research and development	2,027	273
Other	270	160
	$ 4,823	$ 2,296

(9) Common Stock

The Company's common stock has the following characteristics:

- The holders of shares of common stock are entitled to one vote for each share of common stock held at all meetings of stockholders.
- The holders of shares of common stock are entitled to receive dividends, if and when, declared by the Company's board of directors. Since inception, no cash dividends have been declared.

The Company holds repurchase or forfeiture rights relating to 481,531 shares of common stock. The repurchase rights are at a price equal to the initial purchase price by the founders of Private Synlogic, adjusted by the Merger Exchange Ratio. The repurchase right lapses over time and is exercisable should the founders cease providing services to the Company prior to the end of a four-year period which began in April or May 2014, as the case may be. The forfeiture right lapses over time and is triggered when a holder ceases providing services to the Company. As of December 31, 2017, the Company has exercised its repurchase right on 41,819 shares of common stock and 16,111 shares of common stock have been forfeited back to the Company.

(10) Preferred Stock

Preferred Stock of Synlogic, Inc.

The Company's preferred stock may be issued from time to time in one or more series, with each such series to consist of such number of shares and to have such terms as adopted by the board of directors. Authority is given to the board of directors to determine and fix such voting powers, full or limited, or no voting powers, and such designations, preferences and relative participating, optional or other special rights, and qualifications, limitation or restrictions thereof, including without limitation, dividend rights, conversion rights, redemption privileges and liquidation preferences.

Preferred Stock of Private Synlogic

Prior to the Merger, Private Synlogic had contingently redeemable preferred stock and three series of convertible preferred stock. On the Merger Closing Date, Mirna issued shares of its common stock to holders of these shares, at an exchange rate of 0.5532 shares of common stock, after taking into account the Reverse Stock Split, in exchange for each share of preferred stock outstanding immediately prior to the Merger.

Pursuant to, and at the time of, the 2017 Reorganization, preferred stock was granted to all holders of preferred units. The Synlogic preferred stock had substantially similar rights and preferences as the preferred units, except that the preferred stock was convertible into common stock at the option of the holder, on a one-for-one basis, subject to an antidilution adjustment. Conversion of the preferred stock would have been automatically triggered upon a firm-commitment underwritten public offering or upon a supermajority preferred interest vote (see (a)(v) below).

After the 2017 Reorganization, in May 2017, the Company sold and issued 2,882,679 shares of Series C preferred stock at $8.06 per share to investors for total consideration of approximately $40.4 million, net of offering costs of approximately $1.6 million. The Series C preferred stock was issued with the same terms as the then-existing preferred stock.

Rights and Preferences

Preferred stock had the following rights and preferences:

(i) Voting

The holders of the preferred stock were entitled to vote, together with the holders of common stock, on all matters submitted to stockholders for a vote, except with respect to matters on which Delaware General Corporation Law required that a vote would be by a separate class, in which case the holders of the preferred stock would have voted separately as a class. Each holder of preferred stock was entitled to the number of votes equal to the number of shares of common stock into which each share of preferred stock was convertible at the time of such vote.

(ii) Dividends

In the event that a dividend was declared for the holders of common stock, the holders of the preferred stock would have been entitled to the amount of dividends on an as-converted basis. Through December 31, 2017 and December 31, 2016, no dividends were declared or paid.

(iii) Liquidation Preference

In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company, the holders of shares of preferred stock then outstanding would have been entitled to be paid, on a pari passu basis, out of the assets of the Company available for distribution to its stockholders before any payment was made to the holders of common stock by reason of their ownership thereof, with respect to each series of preferred stock, an amount per share equal to the greater of (i) the applicable original issue price, plus any dividends declared but unpaid thereon, or (ii) such amount per share as would have been payable had all shares been converted into common stock immediately prior to such liquidation, dissolution or winding up of the Company.

If upon any such liquidation, dissolution or winding up of the Company, the assets of the Company available for distribution to its stockholders were insufficient to pay the holders of shares of preferred stock the full amount to which they should have been entitled, the holders of shares of preferred stock would share ratably in any distribution of the assets available for distribution in proportion to the respective amounts that would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

(iv) Par Value

Par value was assigned as $0.0001.

(v) Conversion

Each share of preferred stock, at the option of the holder, was convertible into that number of fully paid shares of common stock as determined by dividing the sum of the original issue price, plus any declared but unpaid dividends, by the conversion price in effect at the time of conversion. The initial conversion price for each share of preferred stock would have been the original issue price, subject to adjustment in accordance with antidilution provisions. Each share of preferred stock would have been automatically converted upon (i) the closing of a firm commitment underwritten public offering in which the public offering price exceeded $12.09 (adjusted to reflect subsequent stock dividends, stock splits or recapitalization) and the aggregate proceeds raised were not less than $50,000,000, or (ii) upon the vote or written consent of a supermajority preferred interest (or a majority preferred interest in the event of a public offering that did not result in the offering price or aggregate proceeds amount set forth in clause (i) above).

(vi) Redemption

The preferred stock was not redeemable except upon a deemed liquidation event. Deemed liquidation events included a merger or acquisition in which the majority of the stock of the pre-merger corporation was not owned by the majority of the stockholders of the post-merger entity or the sale of all or substantially all of the Company's assets. All holders of equally and more subordinated equity instruments of the Company would have been entitled to receive the same form of consideration upon the occurrence of a deemed liquidation event, consequently, the preferred stock was classified as permanent equity.

In September 2014, the Company entered into a letter agreement with the Bill & Melinda Gates Foundation ("the Gates Foundation") with respect to the Gates Foundation purchase of 781,693 shares of the Company's Series A Preferred Stock. The Gates Foundation investment was made in three tranches of 201,163 shares in September 2014, 218,646 shares in May 2015 and 361,884 shares in February 2016. Under the letter agreement, the Company was required to spend the approximately $5.0 million invested by the Gates Foundation for research on a particular disease, further develop the Company's proprietary technology platform and provide assistance with access to use of such technology in developing countries. If the Company failed to spend the amount appropriately, or defaulted under certain other commitments in the agreement and the Company did not cure such default within 90 days of notice, if requested by the Gates Foundation, the Company would have been obligated to redeem the shares of Series A Preferred Stock or shares of common stock into which they had converted then held by the Gates Foundation or find a third party to purchase such shares at a price equal to the greater of the initial purchase price and the then current fair value of such shares. In either case, if the Company, over the 6 months following such redemption, had sold substantially all of its equity or assets or completed an initial public offering at a value greater than 200% of the price paid upon redemption, then the Company would have had to reimburse the Gates Foundation for the difference. As of December 31, 2017, all obligations with respect to the Gates Foundation investment have been satisfied.

Participation Rights in Future Equity Issuances

For series of preferred stock that were issued in multiple tranches, all holders of preferred stock had a pro rata right and obligation, based on their percentage equity ownership within the series, to participate in subsequent issuances within the same series of equity securities of the Company approved by 70% vote of holders of preferred stock. Should any such holder have chosen not to purchase its full pro rata share, they would have been deemed a defaulting purchaser and all preferred stock held by a defaulting purchaser would have been automatically converted into common stock of the Company.

(11) Preferred Units

Prior to the 2017 Reorganization, the Company had one class of contingently redeemable preferred units and two classes of convertible preferred units. Pursuant to the 2015 Reorganization, each share of the Company's Series A Preferred Stock and Series A Contingently Redeemable Preferred Stock was exchanged for a like type and number of the Company's Class A Preferred Units and Contingently Redeemable Class A Preferred Units, respectively.

In February 2016, Synlogic issued and sold 2,005,348 units of Class A-3 Preferred Units and 361,884 units of Contingently Redeemable Class A-3 Preferred Stock at $7.23 per unit to investors for net proceeds of approximately $17.1 million. There were no issuance costs related to these transactions.

In February 2016, Synlogic also issued and sold 1,029,850 units of Class B Preferred Units at $13.53 per unit to investors for net proceeds of approximately $13.6 million. Issuance costs related to this transaction of approximately $0.3 million were recorded as a reduction of proceeds within Class B Preferred Units (together with the Class A Preferred Units, Contingently Redeemable Class A Preferred Units, Class A-2 Preferred Units, Class A-2 Contingently Redeemable Preferred Units, Class A-3 Preferred Units and Contingently Redeemable Class A-3 Preferred Units, the "Preferred Units").

Rights and Preferences

The Preferred Units had substantially similar rights and preferences as were conferred upon the preferred stock as follows:

(i) Voting

The holders of the Preferred Units were entitled to vote, together with the holders of the Company's common units as a single class, on all matters submitted to unit holders for a vote. In addition, holders of at least a majority of the outstanding Preferred Units and common units voting as a single class were entitled to take any action required or permitted to be taken at any meeting of the members, unless a different vote is required by the Delaware Limited Liability Company Act or the Company's operating agreement.

(ii) Distributions

Distributions were governed by the Company's operating agreement (Note 13). No distributions were made in either of the years ended December 31, 2017 or December 31, 2016.

(iii) Liquidation Preference

In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company, the assets of the Company would have been distributed, after the payout or provision for payment of all creditors of the Company, in accordance with the same order of priority as distributions (Note 13).

(iv) Par Value

The Preferred Units did not have a par value.

(v) Redemption

The Preferred Units were not redeemable except upon a deemed liquidation event. Deemed liquidation events included the merger, acquisition or sale of all or substantially all of the Company's assets. All holders of equally and more subordinated equity instruments of the Company would have been entitled to receive the same form of consideration upon the occurrence of a deemed liquidation event, consequently, the Preferred Units were classified as permanent equity.

In September 2014, the Company entered into a letter agreement with the Bill & Melinda Gates Foundation ("the Gates Foundation") (Note 10) with respect to the Gates Foundation purchase of 781,693 shares of the Company's Series A Preferred Stock. The Gates Foundation investment was made in three tranches of 201,163 shares in September 2014, 218,646 shares in May 2015 and 361,884 units in February 2016. The first two tranches, totaling 419,809 shares were exchanged for Class A Preferred Units pursuant to the 2015 Reorganization in July 2015. As a result, 781,693 units of Class A Preferred Units with a cost of approximately $5.0 million were classified as Contingently Redeemable Preferred Units in mezzanine equity, as of December 31, 2016.

(vi) Participation Rights

Holders of Class A Preferred Units had the right and obligation to participate in additional closings of Class A Preferred Units upon the achievement of certain milestones by the Company. If any holder of Class A Preferred Units did not purchase the number of Class A Preferred Units required to be purchased by it at any such additional closing, then each Class A Preferred Unit held by such member would have automatically been converted into common units at the applicable adjustment ratio in effect with respect to such units immediately prior to such closing. All holders of Class A Preferred Units participated in additional closings at the required levels. Holders of Class B Preferred Units had the right and obligation to participate in additional closings of Class B Preferred Units upon the achievement of certain milestones by the Company. If any holder of Class B Preferred Units did not purchase the number of Class B Preferred Units required to be purchased by it at any such additional closing, then each Class B Preferred Unit held by such member would have automatically been converted into common units at the applicable adjustment ratio in effect with respect to such units immediately prior to such closing.

(vii) Initial Public Offering

In connection with preparation for an initial public offering, upon request of holder of at least 70% of the Preferred Units, all unit holders would have been required to have taken appropriate steps to implement a reorganization of the Company that may have included, for example, contribution of their units to a newly formed corporation.

(12) Equity-based Compensation and Equity Incentive Plans

The Company is displaying all equity in its post-Merger amounts, as impacted by the Exchange Ratio.

Equity Plans

The Company has a number of equity plans, two of which are currently active.

The 2015 Equity Incentive Award Plan ("2015 Plan") was adopted by Mirna in 2015 and remains active after the Merger, now functioning as the primary equity plan for the Company. Following the Merger, there were 647,893 shares authorized under the 2015 Plan. The 2015 Plan includes an "evergreen provision" that allows for an annual increase in the number of shares of common stock available for issuance under the 2015 Plan, which annual increase will be added on the first day of each fiscal year from 2016 through 2025, inclusive, and will be equal to the lesser of (i) five percent of the shares outstanding on the last day of the immediately preceding fiscal year and (ii) such smaller number of shares as determined by the Board of Directors. The 2015 Plan provides for the granting of a variety of stock-based compensation awards, including stock options, stock appreciation rights, restricted stock awards, restricted stock unit awards, deferred stock awards, dividend equivalent awards, stock payment awards, performance awards and other stock-based awards.

The 2017 Stock Incentive Plan was adopted by Private Synlogic in 2017 at the time of the 2017 Reorganization and provides for the grant of incentive stock options, non-qualified stock options, restricted and unrestricted stock awards and other stock-based awards. Under the 2017 Plan 1,753,061 shares were initially authorized and reserved for issuance. Pursuant to the 2017 Reorganization, Private Synlogic issued restricted common stock awards under the 2017 Plan to replace the canceled incentive units pursuant to the termination of the 2015 LLC Plan ("2015 LLC Plan"). In addition, Private Synlogic also issued stock options to certain employees prior to the Merger. Pursuant to the Merger Agreement, each restricted common stock award of Private Synlogic under the 2017 Plan that was outstanding immediately prior to the Merger and each option to purchase common stock of Private Synlogic under the 2017 Plan that was outstanding and unexercised immediately prior to the Merger was converted into and became restricted common stock and options to purchase shares of the Company's common stock, respectively, based on the Exchange Ratio of 0.5532 and the Company assumed the 2017 Plan.

The 2015 Employee Stock Purchase Plan ("ESPP") was adopted by Mirna in 2015 and allows eligible employees to purchase shares of the Company's common stock at a discount through payroll deductions of up to 15% of their eligible compensation, subject to any plan limitations. The ESPP generally provides for set offering periods, and at the end of each offering period, employees are able to purchase shares at 85% of the lower of the fair market value of the Company's common stock on the first trading day of the offering period or on the last trading day of the offering period. The Company has suspended the ESPP.

The 2008 Long Term Incentive Plan ("2008 Plan") was adopted by Mirna in 2008 and allowed for the grant of incentive stock options to employees and nonqualified stock options and other equity awards to employees and nonemployees. The 2015 Plan is the successor to the 2008 Plan and at the time of the Merger, the remaining awards outstanding thereunder were cancelled and the number of shares with respect to those awards were transferred to the 2015 Plan. As of the Merger, the 2008 Plan was retired.

The 2015 LLC Plan was adopted by Private Synlogic at the time of the 2015 Reorganization, which provided for the grant of equity incentive units to employees, officers, directors or consultants. The 2015 LLC Plan was cancelled pursuant to the 2017 Reorganization as described above.

As of December 31, 2017, there were 85,809 shares available for future grant under the Company's two active equity incentive plans, the 2017 Plan and the 2015 Plan.

Stock Options

The weighted average assumptions used in the Black-Scholes option-pricing model for stock options issued under its two active equity plans, the 2015 Plan and the 2017 Plan, during the year ended December 31, 2017 were:

	Year ended December 31, 2017	
	Employee	Nonemployee
Expected term	6.2 years	0.2-1.6 years
Weighted-average, risk-free interest rate	2.1%	1.0%
Expected volatility	70.4%	63.8%
Dividend yield	—	—

The following table summarizes stock option activity, as adjusted for the Exchange Ratio under the 2015 and 2017 Plans.

	Stock options outstanding			
	Number of options	Weighted average exercise price	Weighted average remaining contractual term	Aggregate Intrinsic value [a] (in thousands)
Outstanding at December 31, 2016	—	$ —	—	$ —
Options granted upon 2017 Reorganization	295,289	13.53	9.4	—
Granted	986,358	13.62	9.7	—
Exercised	(386)	13.53	9.4	—
Forfeited	(14,040)	13.53	9.4	
Outstanding at December 31, 2017	1,267,221	13.62	9.6	$ —
Vested or expected to vest at December 31, 2017	1,267,221	13.62	9.6	—
Exercisable at December 31, 2017	156,068	13.67	9.4	$ —

[a] The aggregate intrinsic value is calculated as the difference between the exercise price of the options and the fair market value of the underlying common stock for the options that were in the money at December 31, 2017. No options were in the money at December 31, 2017.

During the year ended December 31, 2017, 1,281,647 stock options were granted to employees and consultants and approximately $1.9 million in equity compensation was recognized related to stock options granted to employees and approximately $0.1 million for stock options granted related to consultants.

The weighted average grant date fair value per share of options granted to employees during the year ended December 31, 2017 was approximately $8.73 and the grant date fair value was approximately $10.8 million.

As of December 31, 2017, there was approximately $9.0 million of unrecognized share-based compensation related to employees for unvested stock option grants which is expected to be recognized over a weighted average period of 3.24 years. The total unrecognized share-based compensation cost will be adjusted for actual forfeitures as they occur. In addition, there was approximately $0.1 million of unrecognized share-based compensation, related to unvested stock option grants to non-employees which is expected to be recognized over a weighted average period of 0.29 years. The amount of equity-based compensation expense related to non-employees that will ultimately be recorded will depend on the remeasurement of the outstanding awards through their vesting date.

Restricted Common Stock

During the year ended December 31, 2017, 1,062,794 shares of restricted common stock were granted including 1,059,910 shares of restricted common stock (adjusted for the Exchange Ratio) granted in exchange for the restricted common units and incentive units that were cancelled as part of the 2017 Reorganization. These shares retained the same vesting schedule as the cancelled restricted common units and incentive units. Private Synlogic treated these as modifications to the original grants of incentive units because the cancellation and reissuance was deemed to be concurrent. The calculation of the incremental compensation expense was based on the excess of the fair value of the award measured immediately before and after the modification. As a result of the modification, Private Synlogic recognized approximately $26,000 in equity-based compensation.

The following table shows restricted common stock activity:

	Restricted stock awards	
	Number of shares	Grant date fair value (per share)
Unvested at December 31, 2016	—	$ —
Awards exchanged upon 2017 Reorganization	1,059,910	13.53
Granted	2,884	19.01
Vested	(671,204)	13.54
Forfeited	(16,111)	13.53
Unvested at December 31, 2017	375,479	$ 13.55

During the year ended December 31, 2017, 671,204 shares of restricted common stock vested and approximately $0.5 million in equity compensation was recognized.

As of December 31, 2017, there was approximately $0.6 million of unrecognized share-based compensation related to restricted stock awards granted to employees, which is expected to be recognized over a weighted average period of 2.1 years. The total unrecognized share-based compensation cost will be adjusted for actual forfeitures as they occur. In addition, there was approximately $0.1 million of unrecognized share-based compensation, related to unvested restricted stock awards granted to non-employees which is expected to be recognized over a weighted average period of 0.4 years.

Incentive Units

The weighted average assumptions used in the Black-Scholes with barrier option-pricing model for incentive unit awards issued under the 2015 LLC Plan, during the year ended December 31, 2016 were:

	Year ended December 31, 2016	
	Employees	Nonemployees
Expected term	2.5 years	0.6 - 3.3 years
Weighted-average, risk-free interest rate	1.1%	0.9%
Expected volatility	77.0%	71.6%
Dividend yield	—	—

Incentive units issued by Synlogic, LLC under the 2015 LLC Plan generally vested 25% after one year and ratably monthly thereafter over the next 36 months. Certain awards provided for accelerated vesting upon a change in control, as defined in the 2015 LLC Plan. Incentive units did not expire. Holders of incentive units had no voting rights in connection with such incentive units. Each incentive unit was intended to be a profits interest within the meaning of IRS regulations promulgated under the Internal Revenue Code. Each incentive unit had a threshold price, which was the price above which an incentive unit would participate in distributions. In this way, an incentive unit was designed to participate in the future profits and appreciation of Synlogic, LLC. Holders of incentive units would have been entitled to receive profits when and if distributions were in excess of the threshold price of the award set by the Board of Directors on the date of grant.

Synlogic, LLC measured and recorded the value of incentive units granted to non-employees over the period of time that services were provided and, as such, unvested portions were subject to remeasurement at subsequent reporting periods.

No incentive units were issued during the year ended December 31, 2017 and 1,352,502 incentive units were issued during the year ended December 31, 2016. In May 2017, all incentive units were cancelled pursuant to the 2017 Reorganization and reissued as restricted common stock. As a result, there was no unrecognized compensation expense related to incentive units as of December 31, 2017.

The following table represents a summary of incentive unit activity, as adjusted for the Merger, under the 2015 LLC Plan:

	Incentive units			
	Number of units	Weighted-average strike price	Weighted-average threshold price	Weighted-average grant date fair value
Nonvested units at December 31, 2015	890,140	$ 1.01	$ 4.57	$ 0.89
Granted	1,352,502	6.38	6.38	1.08
Vested	(281,701)	1.70	4.72	1.17
Forfeited	(204,061)	1.01	4.57	0.78
Non-vested units at December 31, 2016	971,906	$ 5.22	$ 5.93	$ 1.01
Granted	—	—	—	—
Vested	(73,719)	4.01	5.53	0.87
Forfeited	(260,145)	4.19	5.57	1.05
Non-vested units cancelled upon 2017 Reorganization	(638,042)	5.78	6.15	1.05
Non-vested units at December 31, 2017	—	$ —	$ —	$ —
Vested or expected to vest at December 31, 2017	—	$ —	$ —	$ —

Restricted Common Units

No restricted common unit awards were issued by Synlogic, LLC during the years ended December 31, 2017 and 2016. During the years ended December 31, 2017 and 2016, 37,770 and 143,532 restricted common units, respectively, vested and approximately $0.1 million was recognized in equity compensation in each period. In May 2017, the restricted common unit award was cancelled pursuant to the 2017 Reorganization and reissued as restricted common stock. As a result, there was no unrecognized compensation expense related to unvested restricted common units as of December 31, 2017.

The following table shows the restricted common unit activity, as adjusted for the Merger:

	Restricted common units	
	Number of units	Grant date fair value (per unit)
Unvested at December 31, 2015	362,619	$ 1.48
Granted	—	—
Vested	(143,532)	1.48
Forfeited	—	—
Unvested at December 31, 2016	219,087	$ 1.48
Granted	—	—
Vested	(37,770)	1.48
Forfeited	—	—
Exchanged as part of 2017 Reorganization	(181,317)	1.48
Unvested at December 31, 2017	—	$ —

Equity Compensation

The Company has recorded total equity-based compensation expense of approximately $2.7 million and $0.4 million, during the years ended December 31, 2017 and 2016, respectively. Equity compensation during the years ended December 31, 2017 and 2016 is derived from multiple equity instruments, including stock options, restricted stock awards, incentive units and restricted common units, depending on the legal structure of the Company at the time.

In July 2015, in connection with the 2015 Reorganization, all outstanding stock options and awards were canceled and reissued as incentive units and restricted common units. As such, equity compensation during the year ended December 31, 2016 and the first half of 2017 was derived from incentive units and from a grant of restricted common units.

In May 2017, in connection with the 2017 Reorganization, the incentive units and restricted common units were cancelled and exchanged for restricted stock awards and stock options. Equity compensation after May 2017, was derived from stock options and restricted stock awards.

The following table summarizes equity-based compensation expense within the Company's consolidated statements of operations and comprehensive loss for the years ended December 31, 2017 and 2016 (in thousands):

	Years ended December 31,	
	2017	2016
Research and development	$ 1,410	$ 154
General and administrative	1,242	215
	$ 2,652	$ 369

The following table summarizes equity-based compensation expense by type of award for the years ended December 31, 2017 and 2016 (in thousands):

	Years ended December 31,	
	2017	2016
Stock options	$ 1,956	$ —
Restricted stock awards	508	—
Incentive units	132	235
Restricted common units	56	134
	$ 2,652	$ 369

(13) Distributions

The Board of Directors of Synlogic, LLC had the authority to determine the amount, if any, of proceeds available for distribution to unit holders. In the event that a distribution of proceeds was declared by the Board of Directors, such proceeds would have been distributed in accordance with the following order of priority:

- First, to holders of Class B Preferred Units, pro rata in proportion to their unpaid contributed capital, until such holder had received an amount equal to its capital contribution;
- Second, to holders of Class A Preferred Units and Class A Contingently Redeemable Preferred Units, pro rata in proportion to their unpaid contributed capital, until such holder had received an amount equal to its capital contribution;
- Third, to all holders of preferred units, common units and incentive units, pro rata in proportion to the remaining amount to be distributed, until an aggregate amount had been distributed in respect of each preferred unit, common unit and incentive unit equal to the greatest aggregate amount per unit distributed in respect of any preferred unit under the first and second priority described above; provided, that no holder of an incentive unit shall participate in any distributions until a total amount equal to the threshold price with respect to such incentive unit has been distributed in respect of any common unit outstanding on the date of issuance of such incentive unit subsequent to the issuance of such incentive unit;
- Fourth, to each holder of certain incentive units for which the Board of Directors had established a strike price, pro rata in proportion to the remaining amount to be distributed, an amount equal to the difference between the strike price for such incentive unit, and the threshold price for such incentive unit; and
- Thereafter, to all holders of preferred units, common units and incentive units, pro rata in proportion to their percentage interest.

No distributions were made to unit holders prior to the 2017 Reorganization.

(14) Significant Agreements

AbbVie Collaboration Agreement

In July 2015, the Company entered into an Agreement and Plan of Merger ("the Agreement") with AbbVie under which the Company granted an exclusive option to AbbVie to purchase IBDCo and agreed to collaborate in researching and developing an Investigatory New Drug ("IND") candidate for the treatment of IBD.

In exchange for the exclusive option to acquire IBDCo, initial research and development services, ongoing patent defense, and participation on the joint research committee ("JRC"), AbbVie agreed to pay IBDCo an upfront, nonrefundable cash payment of $2.0 million, which IBDCo received in December 2015. AbbVie also agreed to pay IBDCo up to $16.5 million in development milestone payments, all of which were considered substantive, as well as an option exercise fee upon the execution of their option to buy IBDCo. In May 2017, the Company achieved the first development milestone under the Agreement for consideration of $2.0 million. The agreement also provides for royalty payments and payments upon the achievement of certain clinical, regulatory and commercial milestones.

The Agreement sets forth the Company's and AbbVie's respective obligations for development and delivery of an IND candidate package using reasonable commercial efforts. The JRC will make a determination as to the continuation of the collaboration at the achievement of the milestones.

At the inception of the Agreement, the Company identified the following deliverables: (i) an exclusive option to purchase IBDCo, (ii) research and development services and ongoing patent defense, and (iii) participation on the JRC. The Company also identified contingent deliverables related to four phases of research and development, delivery of an IND candidate package milestone, and transfer of ownership of IBDCo upon exercise of the option to buy IBDCo. The contingent deliverables have been excluded from the initial allocation and will be treated as a separate unit of accounting when and if delivered.

The Company concluded that none of the three deliverables identified at the inception of the Agreement has stand-alone value from the other undelivered elements. Accordingly, these deliverables represent a single unit of accounting.

The only consideration that is fixed and determinable is the nonrefundable upfront payment of $2.0 million. The consideration relates to the three identified deliverables that comprise the single unit of accounting, which will be recognized over the period of performance. The period of performance will be through the option period, which is closely tied to the completion of the research and development collaboration with AbbVie, and has been estimated to be 54 months. The Company will periodically review and, if necessary, revise the estimated period of performance.

During the years ended December 31, 2017 and 2016, the Company recognized approximately $2.4 million and $0.4 million , respectively, in revenue associated with the Agreement. As of December 31, 2017, there was approximately $1.1 million of deferred revenue related to the Agreement, which is classified as current or noncurrent in the consolidated balance sheets based on the Company's estimate of revenue that will be recognized within the next twelve months. All costs associated with the collaboration agreement will be recorded in research and development expense in the consolidated statements of operations and comprehensive loss in the period incurred.

License Agreement with the Massachusetts Institute of Technology and Boston University

In April 2017, the Company exercised an option associated with the October 2014 agreement with Boston University and the Massachusetts Institute of Technology to acquire a license for certain intellectual property in exchange for $50,000. The execution of this option triggered an equity award for the issuance of 325,377 common units, which were converted to 325,377 common shares upon the 2017 Reorganization and converted to 179,999 common shares during the Merger. Based on the fair value of common units at the time of the execution of the license, the Company recognized license fees of approximately $1.8 million upon issuance of the common units associated with the equity award. Additionally, the Company was required to pay approximately $0.3 million for prior patent costs incurred in connection with the option agreement. The Company recorded these amounts, including the fair value of the common stock issued to the licensors as research and development expense, as the licenses do not have future alternative use, in accordance with ASC Topic 730, *Research and Development.*

Sales Agreement with Cowen and Company

On October 13, 2017 the Company entered into a sales agreement with Cowen and Company, LLC ("Cowen") with respect to an at-the-market ("ATM") offering program under which the Company may offer and sell, from time to time at its sole discretion, shares of its common stock through Cowen as its sales agent. In an ATM offering, exchange-listed companies incrementally sell

newly issued shares into the secondary trading market through a designated broker-dealer at prevailing market prices. No sales of common stock were made pursuant to the ATM during 2017.

(15) Net Loss per Share/Unit

The following table sets forth the computation of basic and diluted net loss per share attributable to common stockholders/unit holders (in thousands, except for share/unit and per share/unit amounts):

	2017	2016
Numerator:		
Net loss attributable to common stockholders	$ (40,377)	$ —
Denominator:		
Weighted-average common shares outstanding - basic and diluted	6,724,641	—
Net loss per share attributable to common stockholders - basic and diluted	$ (6.00)	$ —
Numerator:		
Net loss attributable to common unit holders	$ —	$ (20,954)
Denominator:		
Weighted-average common units outstanding - basic and diluted	—	1,575,558
Net loss per unit attributable to common unit holders - basic and diluted	$ —	$ (13.30)

The Company's potentially dilutive shares/units, which include outstanding stock options and unvested restricted common stock/units, are considered to be common share/unit equivalents and are only included in the calculation of diluted net loss per share/unit when their effect is dilutive.

The following potential common shares/units, presented based on amounts outstanding at each period end, were excluded from the calculation of the diluted net loss per share/unit attributable to common stockholders/unit holders for the period indicated because including them would have had an anti-dilutive effect.

	As of December 31,	
	2017	2016
Unvested restricted common unit awards		219,087
Unvested restricted common stock awards	375,479	—
Outstanding options to purchase common stock	1,267,221	—

(16) Income Taxes

Deferred taxes are recognized for temporary differences between the basis of assets and liabilities for financial statement and income tax purposes. Deferred tax assets consist of the following (in thousands):

	December 31,	
	2017	2016
Deferred tax assets:		
Net operating loss carryforwards	$ 21,248	$ 11,478
Tax credit carryforwards	3,038	957
Accrued expenses	32	170
Property and equipment	390	34
Deferred rent	53	100
Equity compensation	503	119
Amortizable intangibles	1,492	201
Other	—	1
Gross deferred tax assets	26,756	13,060
Deferred tax liability:		
Other	(241)	—
Valuation allowance	(26,515)	(13,060)
Net deferred tax assets	$ —	$ —

Management of the Company has evaluated the positive and negative evidence bearing upon the realizability of the Company's deferred tax assets, which are comprised principally of net operating loss carryforwards, and determined that it is more likely than not that the Company will not recognize the benefits of the deferred tax assets. As a result, a full valuation allowance of approximately $26.5 million and $13.1 million was established at December 31, 2017 and 2016, respectively.

A reconciliation of income tax expense computed at the statutory federal income tax rate to income taxes as reflected in the financial statements is as follows (dollars in thousands):

	Years ended December 31,			
	2017		2016	
	Amount	Tax Rate	Amount	Tax Rate
Income tax benefit using U.S. federal statutory rate	$ (13,728)	34%	$ (7,125)	34%
State income taxes, net of federal benefit	(2,085)	5%	(1,078)	5%
Other permanent differences	307	(1)%	100	0%
Foreign rate differential	—	0%	—	0%
Tax credits	(1,893)	5%	(591)	3%
Other items	120	0%	(5)	0%
Change in rate due to Tax Reform	10,808	(27)%	—	0%
Mirna acquisition	(6,984)	17%	—	0%
Net change in valuation allowance	13,455	(33)%	8,699	(42)%
Income tax expense (benefit)	—	—	—	—

A roll-forward of the valuation allowance for the years ended December 31, 2017 and 2016 is as follows (in thousands):

	Years ended December 31,	
	2017	2016
Balance at beginning of year	$ (13,060)	$ (4,362)
Increase in valuation allowance	(13,455)	(8,698)
Reversal of valuation allowance	—	—
Effect of foreign currency translation	—	—
Balance at end of year	$ (26,515)	$ (13,060)

As of December 31, 2017 and 2016, the Company had federal and state net operating loss carryforwards that may be available to reduce future taxable income of approximately $82.0 million and $28.7 million, respectively, which begin to expire in 2034. In addition, at December 31, 2017, the Company had federal and state research and development tax credit carryforwards available to reduce future tax liabilities of approximately $2.1 million and $1.2 million, respectively. These credits begin to expire in 2034 and 2029, respectively.

Pursuant to Section 382 of the Internal Revenue Code of 1986 (“IRC”), certain substantial changes in the Company’s ownership may result in a limitation on the amount of net operating loss (“NOL”) carryforwards and research and development credit (“R&D credit”) carryforwards that may be used in future years. Utilization of the NOL and R&D credit carryforwards may be subject to a substantial annual limitation under Section 382 of the IRC due to ownership change limitations that have occurred previously or that could occur in the future. These ownership changes may limit the amount of NOL and R&D credit carryforwards that can be utilized annually to offset future taxable income and tax, respectively. The Company has not completed a study to assess whether an ownership change has occurred, or whether there have been multiple ownership changes since its formation, due to a significant complexity and related costs associated with such a study. There could be additional ownership changes in the future that may result in additional limitations on the utilization of NOL carryforwards and credits.

The Company adopted the authoritative guidance on accounting for and disclosure of uncertainty in tax positions, which required the Company to determine whether a tax position of the Company is more likely than not to be sustained upon examination, including resolution of any related appeals of litigation processes, based on the technical merits of the position. For tax positions meeting the more likely than not threshold, the tax amount recognized in the financial statements is reduced by the largest benefit that has a greater than fifty percent likelihood of being realized upon the ultimate settlement with the relevant taxing authority. The Company has not recognized any liability for unrecognized tax benefits as of December 31, 2017.

The Company files tax returns, on an entity-level basis, as prescribed by the tax laws of the jurisdictions in which it operates. In the normal course of business, the Company is subject to examination by federal and state jurisdictions, where applicable. There are currently no pending tax examinations. Tax years from 2014 to the present are open to examination under the statute. The Company’s policy is to record interest and penalties related to income taxes as part of the tax provision. There are no interest or penalties accrued at December 31, 2017 and 2016.

Effects of the Tax Cuts and Jobs Act

On December 22, 2017, President Trump signed into U.S. law the Tax Cuts and Jobs Act of 2017 (“Tax Reform”). ASC Topic 740, *Accounting for Income Taxes*, requires companies to recognize the effect of tax law changes in the period of enactment even though the effective date for most provisions is for tax years beginning after December 31, 2017, or in the case of certain other provisions of the law, January 1, 2018. Given the significance of the legislation, the U.S. Securities and Exchange Commission (the "SEC") staff issued Staff Accounting Bulletin ("SAB") No. 118 (“SAB 118”), which allows registrants to record provisional amounts during a one year “measurement period” similar to that used when accounting for business combinations. However, the measurement period is deemed to have ended earlier when the registrant has obtained, prepared, and analyzed the information necessary to finalize its accounting. During the measurement period, impacts of the law are expected to be recorded at the time a reasonable estimate for all or a portion of the effects can be made, and provisional amounts can be recognized and adjusted as information becomes available, prepared, or analyzed.

SAB 118 summarizes a three-step process to be applied at each reporting period to account for and qualitatively disclose: (1) the effects of the change in tax law for which accounting is complete; (2) provisional amounts (or adjustments to provisional amounts) for the effects of the tax law where accounting is not complete, but that a reasonable estimate has been determined; and (3) a reasonable estimate cannot yet be made and therefore taxes are reflected in accordance with law prior to the enactment of the Tax Cuts and Jobs Act.

However, several provisions of the Tax Reform have significant impact on the Company’s U.S. tax attributes, generally consisting of credits, loss carry-forwards, and amortizable intangibles. The Company has reevaluated its assets and liabilities associated with such future tax benefits in the current year and recognized a decrease in its deferred tax asset of approximately $10.8 million. This reduction in the deferred tax asset has been offset by a coinciding reduction in the associated valuation allowance, creating a zero net impact to the Company’s statement of operations. The Company’s tax attributes are generally subject to a full valuation allowance in the United States and thus, any adjustments to the attributes will not impact the tax provision. Although the Company has made a reasonable estimate of the gross amounts of the attributes disclosed, a final determination of the Tax Reform’s impact on the attributes and related valuation allowance requirements remain incomplete pending a full analysis of the provisions and their interpretations.

Other significant provisions that are not yet effective but may impact income taxes in future years include: a limitation on the current deductibility of net interest expense in excess of 30 percent of adjusted taxable income and a limitation of net operating losses generated after fiscal 2018 to 80 percent of taxable income.

(17) Leases

The Company recorded a rent credit of approximately $0.2 million for the year ended December 31, 2017 due to the accelerated amortization the deferred rent associated with the 200 Sidney Street facility. In July 2017, the Company agreed to terminate its lease and revised its estimate of the remaining amortization period from 63 months to seven months. The Company recorded rent expense of approximately $1.0 million for the year ended December 31, 2016.

Operating Leases

In July 2017, the Company entered into an agreement to lease approximately 41,346 square feet of laboratory and office space at 301 Binney Street in Cambridge, Massachusetts. Annual rent is approximately $3.1 million. The ten-year lease commenced in January 2018 and contains provisions for a free-rent period, annual rent increases and an allowance for tenant improvements. The Company is responsible for real estate taxes, maintenance, and other operating expenses applicable to the leased premises In addition to approximately $1.6 million the Company has committed to for tenant improvements, the operating lease also provided for a tenant improvement allowance, at the cost of the lessor, not to exceed approximately $6.6 million. The Company was deemed to be the accounting owner of the tenant improvements primarily because it was responsible for project cost overruns. Therefore, the amounts will be recorded as a leasehold improvement and deferred rent and will be recorded as a reduction to rent expense ratably over the lease term. At December 31, 2017, the Company has capitalized approximately $5.0 million of the landlord-funded tenant improvements, representing the completed portion of the buildout. In conjunction with the lease, the Company established a letter of credit of approximately $1.0 million secured by cash balances included in restricted cash.

In July 2015, the Company entered into an operating lease for office and laboratory space at 200 Sidney Street in Cambridge, Massachusetts. The operating lease term commenced in February 2016 and expired in April 2021 with a one year renewal option to extend the lease. The Company agreed to terminate the lease in July 2017 at a date that was 30 days after the commencement of its new lease. No penalties were associated with the termination of the lease. Rent expense commenced on February 1, 2016 and was recognized on a straight-line basis over the duration of the term. The operating lease provided for annual rent of approximately $0.9 million, payable on a monthly basis, which increased at a rate of 3% annually, and included three months of rent abatement during the first year. The Company was responsible for real estate taxes, maintenance, and other operating expenses applicable to the leased premises. Pursuant to the lease, the Company provided a security deposit of approximately $0.2 million to the lessor and recorded the deposit in other assets in its consolidated balance sheet. The operating lease also provided for a tenant improvement allowance, at the cost of the lessor, not to exceed approximately $1.3 million, all of which was incurred in 2016. The Company was deemed to be the accounting owner of the tenant improvements primarily because it was responsible for project cost overruns. Therefore, the amounts were recorded as a leasehold improvement and deferred rent and were being recorded as a reduction to rent expense ratably over the lease term of 63 months. As a result of the agreement to terminate its lease, the Company revised its estimate of the remaining amortization period of the deferred rent and its estimate of the remaining useful life of its leasehold improvements to seven months.

On November 14, 2014, the Company entered into an operating sublease for office space with a termination option at the Company's discretion or when the parties mutually agree. The operating lease provided for annual rent of approximately $0.3 million, payable on a monthly basis. The Company was responsible for real estate taxes, maintenance, and other operating expenses applicable to the leased premises. Additionally, the Company maintained a security deposit of approximately $72,000 with the lessor and recorded the deposit in other assets in its consolidated balance sheet. The Company mutually agreed with the lessor to terminate the sublease effective March 4, 2016.

Capital Leases

In June 2017, the Company entered two non-cancellable thirty-six month lease agreements for certain lab equipment of approximately $0.2 million and $0.7 million, respectively. The lease term and payments for each agreement began upon delivery and installation of the equipment. Both leases are accounted for as a capital lease as one has a bargain purchase option and in the other, the present value of the lease exceeds 90% of the fair market value. At December 31, 2017 the interest rate on each capital lease obligation was approximately1.1% and 7.3%, respectively.

In October 2016, the Company entered into a twenty-four month, non-cancellable lease agreement for approximately $0.4 million for certain lab equipment. Due to the existence of a bargain purchase option, the lease has been accounted for as a capital lease. At December 31, 2017 and 2016, the interest rate on the outstanding capital lease obligation was approximately 9.6%.

Future minimum lease payments under the Company's non-cancelable operating and capital leases as of December 31, 2017, are as follows (in thousands):

	Operating leases	Capital leases
Fiscal year:		
2018	$ 1,250	$ 468
2019	3,175	282
2020	3,270	210
2021	3,369	0
2022	3,470	0
Thereafter	21,641	0
Total future minimum lease payments	$ 36,175	$ 960
Less amounts representing interest		69
Capital lease obligations at December 31, 2017		891
Less current portion of capital lease obligations		425
Capital lease obligations, net of current portion		$ 466

(18) Commitments and Contingencies

On November 9, 2015, the Company exercised an option to enter into a license agreement with the Massachusetts Institute of Technology in exchange for $50,000 and reimbursement of prior patent costs of approximately $0.1 million. These amounts were recorded as research and development expense in the year ended December 31, 2016. The agreement requires the payment of annual maintenance fees, of which the Company paid $15,000 during the year ended December 31, 2017. The Company will pay future maintenance fees totaling approximately $0.1 million through the year ending December 31, 2020 and $50,000 per year thereafter during the period the license is effective, and may also require future payments of up to approximately $1.9 million upon achievement of certain regulatory milestones.

In the ordinary course of business, the Company may be subject to legal proceedings, claims and litigation as the Company operates in an industry susceptible to patent legal claims. The Company accounts for estimated losses with respect to legal proceedings and claims when such losses are probable and estimable. Legal costs associated with these matters are expensed when incurred. The Company is not currently a party to any material legal proceedings.

(19) Employee Benefits

The Company has a defined contribution 401(k) plan for eligible employees. Employees are eligible to participate in the plan beginning on their date of hire. Under the terms of the plan, employees may make voluntary contributions as a percentage of compensation. The Company has not made any matching contributions since the adoption of the 401(k) plan.

(20) Related-Party Transactions

During the year ended December 31, 2017, before the Company became a public company, the Company received repayment of the loan to its chief executive officer of approximately $0.2 million. The loan was repaid in June 2017, including interest which accrued at a rate of 0.6%.

The Company contracted services from one of its principal investors for the Company's former chief medical officer who was employed by the principal investor, as well as employed to support separate portfolio companies of the investor. We made no payments during the twelve months ended December 31, 2017 and made payments of approximately $0.1 million during the year ended December 31, 2016, related to reimbursement for a portion of the salary of the former chief medical officer.

The Company contracted the services of The Orphan Group which specializes in supporting biotechnology companies in developing therapeutics toward diseases of high unmet medical needs in rare disorders. The Orphan Group is owned by the Company's former chief operating officer. The Company made no payments to the Orphan Group during the year ended December 2017 and paid approximately $13,000 for contracted services during the year ended December 31, 2016.

(21) Selected Quarterly Data (Unaudited)

The following tables contain quarterly financial information for 2017 and 2016. The Company believes that the following information reflects all normal recurring adjustments necessary for a fair presentation of the information for the periods presented. The operating results for any quarter are not necessarily indicative of results for any future period.

	2017 Quarter Ended			
	March 31	June 30	September 30	December 31
	(in thousands)			
Revenue	$ 111	$ 2,111	$ 111	$ 111
Operating expenses	7,485	11,568	12,186	12,029
Loss from operations	(7,374)	(9,457)	(12,075)	(11,918)
Net loss	(7,368)	(9,388)	(11,924)	(11,697)
Net loss per share attributable to common stockholders - basic and diluted	$ —	$ (4.70)	$ (1.66)	$ (0.74)
Net loss per unit attributable to common unit holders - basic and diluted	$ (4.49)	$ —	$ —	$ —

	2016 Quarter Ended			
	March 31	June 30	September 30	December 31
	(in thousands)			
Revenue	$ 111	$ 111	$ 111	$ 111
Operating expenses	3,937	5,082	5,419	6,970
Loss from operations	(3,826)	(4,971)	(5,308)	(6,859)
Net loss	(3,828)	(4,972)	(5,306)	(6,848)
Net loss per unit attributable to common unit holders - basic and diluted	$ (2.52)	$ (3.17)	$ (3.33)	$ (4.28)

(22) Subsequent Events

On January 26, 2018 the Company sold 5,130,000 shares of its common stock through a firm commitment, underwritten public offering at a price to the public of $9.75 per share. On January 31, 2018, the underwriters elected to exercise their option to purchase 769,500 additional shares of common stock at the public offering price, less underwriting discounts and commissions. As a result of the offering, including the exercise of the overallotment option, the Company received aggregate net proceeds of approximately $53.7 million, after underwriting discounts and commissions and other estimated offering expenses.

Exhibit 10.1

SYNLOGIC, INC.
2015 EQUITY INCENTIVE AWARD PLAN

ARTICLE 1.

PURPOSE

The purpose of the Synlogic, Inc. 2015 Equity Incentive Award Plan (as it may be amended from time to time, the "Plan") is to promote the success and enhance the value of Synlogic, Inc. (the "Company") by linking the individual interests of the members of the Board, Employees, and Consultants to those of the Company's stockholders and by providing such individuals with an incentive for outstanding performance to generate superior returns to the Company's stockholders. The Plan is further intended to provide flexibility to the Company in its ability to motivate, attract, and retain the services of members of the Board, Employees, and Consultants upon whose judgment, interest, and special effort the successful conduct of the Company's operation is largely dependent.

ARTICLE 2.

DEFINITIONS AND CONSTRUCTION

Wherever the following terms are used in the Plan they shall have the meanings specified below, unless the context clearly indicates otherwise. The singular pronoun shall include the plural where the context so indicates.

2.1 "Administrator" shall mean the entity that conducts the general administration of the Plan as provided in Article 13 hereof. With reference to the duties of the Administrator under the Plan which have been delegated to one or more persons pursuant to Section 13.6 hereof, or as to which the Board has assumed, the term "Administrator" shall refer to such person(s) unless the Committee or the Board has revoked such delegation or the Board has terminated the assumption of such duties.

2.2 "Affiliate" shall mean any Parent or Subsidiary.

2.3 "Applicable Accounting Standards" shall mean Generally Accepted Accounting Principles in the United States, International Financial Reporting Standards or such other accounting principles or standards as may apply to the Company's financial statements under United States federal securities laws from time to time.

2.4 "Applicable Law" shall mean any applicable law, including without limitation, (i) provisions of the Code, the Securities Act, the Exchange Act and any rules or regulations thereunder; (ii) corporate, securities, tax or other laws, statutes, rules, requirements or regulations, whether federal, state, local or foreign; and (iii) rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded.

2.5 "Award" shall mean an Option, a Restricted Stock award, a Restricted Stock Unit award, a Performance Award, a Dividend Equivalents award, a Deferred Stock award, a Deferred Stock Unit award, a Stock Payment award or a Stock Appreciation Right, which may be awarded or granted under the Plan (collectively, "Awards").

2.6 "Award Agreement" shall mean any written notice, agreement, terms and conditions, contract or other instrument or document evidencing an Award, including through electronic medium, which shall contain such terms and conditions with respect to an Award as the Administrator shall determine consistent with the Plan.

2.7 "Board" shall mean the Board of Directors of the Company.

2.8 "Cause" shall mean, unless such term or an equivalent term is otherwise defined by the applicable Award Agreement or other written agreement between a Holder and the Company applicable to an Award, the occurrence of any of the following events: (i) a Holder's act of personal dishonesty, willful violation

of any law, rule or regulation (other than minor traffic violations or similar offenses), or breach of fiduciary duty involving personal profit, (ii) a Holder's failure to satisfactorily perform such Holder's duties and responsibilities for the Company or any Affiliate, (iii) a Holder's conviction of, or plea of nolo contender to, any felony or a crime involving moral turpitude, (iv) a Holder has engaged in negligence or willful misconduct in the performance of such Holder's duties, including, but not limited to, willfully refusing without proper legal reason to perform such Holder's duties and responsibilities, (v) a Holder has materially breached any corporate policy or code of conduct established by the Company or any Subsidiary as such policies or codes may be adopted from time to time, (vi) a Holder has violated the terms of any confidentiality, nondisclosure, intellectual property, nonsolicitation, noncompetition, proprietary information or inventions agreement, or any other agreement between such Holder and the Company or any Subsidiary related to such Holder's service with the Company or any Subsidiary, or (vii) a Holder has engaged in conduct that is likely to have a deleterious effect on the Company or any Subsidiary or their legitimate business interests, including, but not limited to, their goodwill and public image. The determination that a Holder's Termination of Service is either for Cause or without Cause shall be made by the Company in its sole discretion. Any determination by the Company that a Holder experienced a Termination of Service by reason of dismissal without Cause for the purposes of outstanding Awards held by such Holder shall have no effect upon any determination of the rights or obligations of the Company or such Holder for any other purpose.

2.9 "Change in Control" shall mean the occurrence, in a single transaction or in a series of related transactions, of any one or more of the following events:

(a) A transaction or series of transactions (other than an offering of Common Stock to the general public through a registration statement filed with the Securities and Exchange Commission) whereby any "person" or related "group" of "persons" (as such terms are used in Sections 13(d) and 14(d)(2) of the Exchange Act) (other than the Company, any of its subsidiaries, an employee benefit plan maintained by the Company or any of its subsidiaries or a "person" that, prior to such transaction, directly or indirectly controls, is controlled by, or is under common control with, the Company) directly or indirectly acquires beneficial ownership (within the meaning of Rule 13d-3 under the Exchange Act) of securities of the Company possessing more than 50% of the total combined voting power of the Company's securities outstanding immediately after such acquisition; or

(b) During any period of two consecutive years, individuals who, at the beginning of such period, constitute the Board together with any new Director(s) (other than a Director designated by a person who shall have entered into an agreement with the Company to effect a transaction described in Section 2.9(a) or 2.9(c)) whose election by the Board or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds of the Directors then still in office who either were Directors at the beginning of the two-year period or whose election or nomination for election was previously so approved, cease for any reason to constitute a majority thereof; or

(c) The consummation by the Company (whether directly involving the Company or indirectly involving the Company through one or more intermediaries) of (x) a merger, consolidation, reorganization, or business combination or (y) a sale or other disposition of all or substantially all of the Company's assets in any single transaction or series of related transactions or (z) the acquisition of assets or stock of another entity, in each case other than a transaction:

(i) which results in the Company's voting securities outstanding immediately before the transaction continuing to represent (either by remaining outstanding or by being converted into voting securities of the Company or the person that, as a result of the transaction, controls, directly or indirectly, the Company or owns, directly or indirectly, all or substantially all of the Company's assets or otherwise succeeds to the business of the Company (the Company or such person, the "Successor Entity")) directly or indirectly, at least a majority of the combined voting power of the Successor Entity's outstanding voting securities immediately after the transaction, and

(ii) after which no person or group beneficially owns voting securities representing 50% or more of the combined voting power of the Successor Entity; provided, however, that no person or group shall be treated for purposes of this Section 2.9(c)(ii) as beneficially owning 50% or more of the combined voting power of the Successor Entity solely as a result of the voting power held in the Company prior to the consummation of the transaction; or

(d) The Company's stockholders approve a liquidation or dissolution of the Company.

Notwithstanding the foregoing, if a Change in Control constitutes a payment event with respect to any portion of an Award that provides for the deferral of compensation and is subject to Section 409A of the Code, the transaction or event described in subsection (a), (b), (c) or (d) with respect to such Award (or portion thereof) must also constitute a "change in control event," as defined in Treasury Regulation Section 1.409A-3(i)(5) to the extent required by Section 409A.

The Committee shall have full and final authority, which shall be exercised in its discretion, to determine conclusively whether a Change in Control of the Company has occurred pursuant to the above definition, and the date of the occurrence of such Change in Control and any incidental matters relating thereto; provided that any exercise of authority is in conjunction with a determination of whether a Change in Control is a "change in control event" as defined in Treasury Regulation Section 1.409A-3(i)(5) shall be consistent with such regulation.

2.10 "Code" shall mean the Internal Revenue Code of 1986, as amended from time to time, together with the regulations and official guidance promulgated thereunder, whether issued prior or subsequent to the grant of any Award.

2.11 "Committee" shall mean the Compensation Committee of the Board, a subcommittee of the Compensation Committee of the Board or another committee or subcommittee of the Board, appointed as provided in Section 13.1 hereof.

2.12 "Common Stock" shall mean the common stock of the Company, par value $0.001 per share.

2.13 "Company" shall have the meaning set forth in Article 1 hereof.

2.14 "Consultant" shall mean any consultant or advisor engaged to provide services to the Company or any Affiliate who qualifies as a consultant or advisor under the applicable rules of the Securities and Exchange Commission for registration of shares on a Form S-8 Registration Statement or any successor Form thereto or, prior to the Public Trading Date, under Rule 701 of the Securities Act.

2.15 "Covered Employee" shall mean any Employee who is, or could be, a "covered employee" within the meaning of Section 162(m) of the Code.

2.16 "Deferred Stock" shall mean a right to receive Shares awarded under Section 10.4 hereof.

2.17 "Deferred Stock Unit" shall mean a right to receive Shares awarded under Section 10.5 hereof.

2.18 "Director" shall mean a member of the Board, as constituted from time to time.

2.19 "Dividend Equivalent" shall mean a right to receive the equivalent value (in cash or Shares) of dividends paid on Shares, awarded under Section 10.2 hereof.

2.20 "DRO" shall mean a "domestic relations order" as defined by the Code or Title I of the Employee Retirement Income Security Act of 1974, as amended from time to time, or the rules thereunder.

2.21 "Effective Date" shall mean September 30, 2015.

2.22 "Eligible Individual" shall mean any person who is an Employee, a Consultant or a Non-Employee Director, as determined by the Administrator.

2.23 "Employee" shall mean any officer or other employee (as determined in accordance with Section 3401(c) of the Code and the Treasury Regulations thereunder) of the Company or any Affiliate.

2.24 "Equity Restructuring" shall mean a nonreciprocal transaction between the Company and its stockholders, such as a stock dividend, stock split, spin-off, rights offering or recapitalization through a large,

nonrecurring cash dividend, that affects the number or kind of Shares (or other securities of the Company) or the share price of Common Stock (or other securities) and causes a change in the per share value of the Common Stock underlying outstanding stock-based Awards.

2.25 "Exchange Act" shall mean the Securities Exchange Act of 1934, as amended from time to time.

2.26 "Fair Market Value" shall mean, as of any given date, the value of a Share determined as follows:

(a) If the Common Stock is (i) listed on any established securities exchange (such as the New York Stock Exchange, the Nasdaq Global Market, the Nasdaq Capital Market and the Nasdaq Global Select Market), (ii) listed on any national market system or (iii) listed, quoted or traded on any automated quotation system, its Fair Market Value shall be the closing sales price for a Share as quoted on such exchange or system for such date or, if there is no closing sales price for a Share on the date in question, the closing sales price for a Share on the last preceding date for which such quotation exists, as reported in The Wall Street Journal or such other source as the Administrator deems reliable;

(b) If the Common Stock is not listed on an established securities exchange, national market system or automated quotation system, but the Common Stock is regularly quoted by a recognized securities dealer, its Fair Market Value shall be the mean of the high bid and low asked prices for such date or, if there are no high bid and low asked prices for a Share on such date, the high bid and low asked prices for a Share on the last preceding date for which such information exists, as reported in The Wall Street Journal or such other source as the Administrator deems reliable; or

(c) If the Common Stock is neither listed on an established securities exchange, national market system or automated quotation system nor regularly quoted by a recognized securities dealer, its Fair Market Value shall be established by the Administrator in good faith.

Notwithstanding the foregoing, with respect to any Award granted after the effectiveness of the Company's registration statement relating to its initial public offering and prior to the Public Trading Date, the Fair Market Value shall mean the initial public offering price of a Share as set forth in the Company's final prospectus relating to its initial public offering filed with the Securities and Exchange Commission.

2.27 "Good Reason" shall mean, unless such term or an equivalent term is otherwise defined by the applicable Award Agreement or other written agreement between a Holder and the Company applicable to an Award, with respect to any particular Holder, the Holder's resignation from all positions he or she then-holds with the Company if (A) without Holder's written consent (I) there is a material reduction of the Holder's base salary; *provided*, *however*, that a material reduction in the Holder's base salary pursuant to a salary reduction program affecting all or substantially all of the employees of the Company and that does not adversely affect Holder to a greater extent than other similarly situated employees shall not constitute Good Reason; or (II) the Holder is required to relocate his or her primary work location to a facility or location that would increase the Holder's one way commute distance by more than fifty (50) miles from the Holder's primary work location as of immediately prior to such change, (B) the Holder provides written notice outlining such conditions, acts or omissions to the Company's General Counsel within thirty (30) days immediately following such material change or reduction, (C) such material change or reduction is not remedied by the Company within thirty (30) days following the Company's receipt of such written notice and (D) the Holder's resignation is effective not later than thirty (30) days after the expiration of such thirty (30) day cure period.

2.28 "Greater Than 10% Stockholder" shall mean an individual then owning (within the meaning of Section 424(d) of the Code) more than ten percent (10%) of the total combined voting power of all classes of stock of the Company or any "parent corporation" or "subsidiary corporation" (as defined in Sections 424(e) and 424(f) of the Code, respectively).

2.29 "Holder" shall mean a person who has been granted an Award.

2.30 "Incentive Stock Option" shall mean an Option that is intended to qualify as an incentive stock option and conforms to the applicable provisions of Section 422 of the Code.

2.31 "Non-Employee Director" shall mean a Director of the Company who is not an Employee.

2.32 "Non-Employee Director Equity Compensation Policy" shall have the meaning set forth in Section 4.6 hereof.

2.33 "Non-Qualified Stock Option" shall mean an Option that is not an Incentive Stock Option or which is designated as an Incentive Stock Option but does not meet the applicable requirements of Section 422 of the Code.

2.34 "Option" shall mean a right to purchase Shares at a specified exercise price, granted under Article 6 hereof. An Option shall be either a Non-Qualified Stock Option or an Incentive Stock Option; provided, however, that Options granted to Non-Employee Directors and Consultants shall only be Non-Qualified Stock Options.

2.35 "Option Term" shall have the meaning set forth in Section 6.4 hereof.

2.36 "Parent" shall mean any entity (other than the Company), whether domestic or foreign, in an unbroken chain of entities ending with the Company if each of the entities other than the Company beneficially owns, at the time of the determination, securities or interests representing more than fifty percent (50%) of the total combined voting power of all classes of securities or interests in one of the other entities in such chain.

2.37 "Performance Award" shall mean a cash bonus award, stock bonus award, performance award or incentive award that is paid in cash, Shares or a combination of both, awarded under Section 10.1 hereof.

2.38 "Performance-Based Compensation" shall mean any compensation that is intended to qualify as "performance-based compensation" as described in Section 162(m)(4)(C) of the Code.

2.39 "Performance Criteria" shall mean the criteria (and adjustments) that the Committee selects for an Award for purposes of establishing the Performance Goal or Performance Goals for a Performance Period, determined as follows:

(a) The Performance Criteria that shall be used to establish Performance Goals are limited to the following: (i) net earnings or losses (either before or after one or more of the following: (A) interest, (B) taxes, (C) depreciation, (D) amortization and (E) non-cash equity-based compensation expense); (ii) gross or net sales or revenue or sales or revenue growth; (iii) net income (either before or after taxes); (iv) adjusted net income; (v) operating income, earnings or profit (either before or after taxes); (vi) cash flow (including, but not limited to, cash flow return on investments, operating cash flow and free cash flow); (vii) return on assets; (viii) return on capital (or invested capital) and cost of capital; (ix) return on stockholders' equity; (x) total stockholder return; (xi) return on sales; (xii) gross or net profit or operating margin; (xiii) costs, reductions in costs and cost control measures; (xiv) funds from operations; (xv) expenses; (xvi) working capital; (xvii) earnings or loss per Share; (xviii) adjusted earnings or loss per share; (xix) price per Share or dividends per Share (or appreciation in and/or maintenance of such price of dividends); (xx) regulatory achievements or compliance (including, without limitation, regulatory body approval for commercialization of a product); (xxi) implementation or completion of critical projects; (xxii) market share; (xxiii) economic value; (xxiv) debt levels or reduction; (xxv) customer retention; (xxvi) sales-related goals; (xxvii) comparisons with other stock market indices; (xxviii) operating efficiency; (xxix) customer satisfaction and/or growth; (xxx) employee satisfaction; (xxxi) research and development achievements; (xxxii) financing and other capital raising transactions; (xxxiii) recruiting and maintaining personnel; and (xxxiv) year-end cash, any of which may be measured either in absolute terms for the Company or any department or operating unit of the Company or as compared to any incremental increase or decrease or as compared to results of a peer group or to market performance indicators or indices.

(b) The Administrator may, in its sole discretion, provide that one or more objectively determinable adjustments shall be made to one or more of the Performance Goals. Such adjustments may include, but are not limited to, one or more of the following: (i) items related to a change in accounting principle; (ii) items relating to financing activities; (iii) expenses for restructuring or productivity initiatives; (iv) other non-operating items; (v) items related to acquisitions; (vi) items attributable to the business operations of any entity acquired by the Company during the Performance Period; (vii) items related to the sale or disposition of a business or segment of a business; (viii) items related to discontinued operations that do not qualify as a segment of a business under Applicable Accounting Standards; (ix) items attributable to any stock dividend, stock split, combination or exchange of stock occurring during the Performance Period; (x) any other items of significant income or expense which are determined to be appropriate adjustments; (xi) items relating to unusual or extraordinary corporate transactions, events or developments, (xii) items related to amortization of acquired intangible assets; (xiii) items that are outside the scope of the Company's core, on-going business activities; (xiv) items related to acquired in-process research and development; (xv) items relating to changes in tax laws; (xvi) items relating to major licensing or partnership arrangements; (xvii) items relating to asset impairment charges; (xviii) items relating to gains or losses for litigation, arbitration and contractual settlements; or (xix) items relating to any other unusual or nonrecurring events or changes in Applicable Laws, accounting principles or business conditions. For all Awards intended to qualify as Performance-Based Compensation, such determinations shall be made within the time prescribed by, and otherwise in compliance with, Section 162(m) of the Code.

2.40 "Performance Goals" shall mean, with respect to a Performance Period, one or more goals established in writing by the Administrator for the Performance Period based upon one or more Performance Criteria. Depending on the Performance Criteria used to establish such Performance Goals, the Performance Goals may be expressed in terms of overall Company performance or the performance of an Affiliate, a division, business unit or one or more individuals. The achievement of each Performance Goal shall be determined, to the extent applicable, with reference to Applicable Accounting Standards.

2.41 "Performance Period" shall mean one or more periods of time, which may be of varying and overlapping durations, as the Administrator may select, over which the attainment of one or more Performance Goals will be measured for the purpose of determining a Holder's right to, and the payment of, a Performance Award.

2.42 "Performance Stock Unit" shall mean a Performance Award awarded under Section 10.1 hereof which is denominated in units of value including dollar value of shares of Common Stock.

2.43 "Permitted Transferee" shall mean, with respect to a Holder, (a) prior to the Public Trading Date, any "family member" of the Holder, as defined under Rule 701 of the Securities Act and (b) on or after the Public Trading Date, any "family member" of the Holder, as defined under the General Instructions to Form S-8 Registration Statement under the Securities Act or any successor Form thereto, or any other transferee specifically approved by the Administrator, after taking into account Applicable Law.

2.44 "Plan" shall have the meaning set forth in Article 1 hereof.

2.45 "Prior Plan" shall mean the Mirna Therapeutics, Inc. 2008 Long Term Incentive Plan, as such plan may be amended from time to time.

2.46 "Program" shall mean any program adopted by the Administrator pursuant to the Plan containing the terms and conditions intended to govern a specified type of Award granted under the Plan and pursuant to which such type of Award may be granted under the Plan.

2.47 "Public Trading Date" shall mean the first date upon which the Common Stock is listed (or approved for listing) upon notice of issuance on any securities exchange or designated (or approved for designation) upon notice of issuance as a national market security on an interdealer quotation system.

2.48 "Restricted Stock" shall mean an award of Shares made under Article 8 hereof that is subject to certain restrictions and may be subject to risk of forfeiture or repurchase.

2.49 "Restricted Stock Unit" shall mean a contractual right awarded under Article 9 hereof to receive in the future a Share or the Fair Market Value of a Share in cash.

2.50 "Securities Act" shall mean the Securities Act of 1933, as amended.

2.51 "Shares" shall mean shares of Common Stock.

2.52 "Share Limit" shall have the meaning set forth in Section 3.1(a) hereof.

2.53 "Stock Appreciation Right" shall mean a stock appreciation right granted under Article 11 hereof.

2.54 "Stock Appreciation Right Term" shall have the meaning set forth in Section 11.4 hereof.

2.55 "Stock Payment" shall mean (a) a payment in the form of Shares, or (b) an option or other right to purchase Shares, as part of a bonus, deferred compensation or other arrangement, awarded under Section 10.3 hereof.

2.56 "Subsidiary" shall mean any entity (other than the Company), whether domestic or foreign, in an unbroken chain of entities beginning with the Company if each of the entities other than the last entity in the unbroken chain beneficially owns, at the time of the determination, securities or interests representing more than fifty percent (50%) of the total combined voting power of all classes of securities or interests in one of the other entities in such chain.

2.57 "Substitute Award" shall mean an Award granted under the Plan upon the assumption of, or in substitution for, outstanding equity awards previously granted by a company or other entity in connection with a corporate transaction, such as a merger, combination, consolidation or acquisition of property or stock; provided, however, that in no event shall the term "Substitute Award" be construed to refer to an award made in connection with the cancellation and repricing of an Option or Stock Appreciation Right.

2.58 "Termination of Service" shall mean:

(a) As to a Consultant, the time when the engagement of a Holder as a Consultant to the Company or an Affiliate is terminated for any reason, with or without cause, including, without limitation, by resignation, discharge, death or retirement, but excluding terminations where the Consultant simultaneously commences or remains in employment or service with the Company or any Affiliate.

(b) As to a Non-Employee Director, the time when a Holder who is a Non-Employee Director ceases to be a Director for any reason, including, without limitation, a termination by resignation, failure to be elected, death or retirement, but excluding terminations where the Holder simultaneously commences or remains in employment or service with the Company or any Affiliate.

(c) As to an Employee, the time when the employee-employer relationship between a Holder and the Company or any Affiliate is terminated for any reason, including, without limitation, a termination by resignation, discharge, death, disability or retirement; but excluding terminations where the Holder simultaneously commences or remains in employment or service with the Company or any Affiliate.

The Administrator, in its sole discretion, shall determine the effect of all matters and questions relating to Terminations of Service, including, without limitation, the question of whether a Termination of Service resulted from a discharge for cause and all questions of whether particular leaves of absence constitute a Termination of Service; provided, however, that, with respect to Incentive Stock Options, unless the Administrator otherwise provides in the terms of the Program, the Award Agreement or otherwise, a leave of absence, change in status from an employee to an independent contractor or other change in the employee-employer relationship shall constitute a Termination of Service only if, and to the extent that, such leave of absence, change in status or other change interrupts employment for the purposes of Section 422(a)(2) of the Code and the then applicable regulations and revenue rulings under said Section. For purposes of the Plan, a Holder's employee-employer relationship or

consultancy relations shall be deemed to be terminated in the event that the Affiliate employing or contracting with such Holder ceases to remain an Affiliate following any merger, sale of stock or other corporate transaction or event (including, without limitation, a spin-off).

ARTICLE 3.

SHARES SUBJECT TO THE PLAN

3.1 Number of Shares.

(a) Subject to Sections 14.1, 14.2 and 3.1(b) hereof, the aggregate number of Shares which may be issued or transferred pursuant to Awards under the Plan shall be equal to the sum of (i) 238,828 Shares, (ii) any Shares subject to awards under the Prior Plan that, on or after the Effective Date, terminate, expire or lapse for any reason without the delivery of Shares to the holder thereof, up to a maximum of 116,951 Shares, and (iii) an annual increase on the first day of each year beginning in 2016 and ending in 2025 equal to the lesser of (A) five percent (5%) of the Shares outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (B) such smaller number of Shares as determined by the Board (such sum, the "Share Limit"); provided, however, no more than 2,000,000 Shares may be issued upon the exercise of Incentive Stock Options. Notwithstanding the foregoing, Shares added to the Share Limit pursuant to Section 3.1(a)(ii) or Section 3.1(a)(iii) hereof shall be available for issuance as Incentive Stock Options only to the extent that making such Shares available for issuance as Incentive Stock Options would not cause any Incentive Stock Option to cease to qualify as such. Notwithstanding the foregoing, to the extent permitted under Applicable Law, Awards that provide for the delivery of Shares subsequent to the applicable grant date may be granted in excess of the Share Limit if such Awards provide for the forfeiture or cash settlement of such Awards to the extent that insufficient Shares remain under the Share Limit in this Section 3.1 at the time that Shares would otherwise be issued in respect of such Award.

(b) If any Shares subject to an Award are forfeited or expire or such Award is settled for cash (in whole or in part), the Shares subject to such Award shall, to the extent of such forfeiture, expiration or cash settlement, again be available for future grants of Awards under the Plan and shall be added back to the Share Limit. In addition, the following Shares shall be available for future grants of Awards under the Plan and shall be added back to the Share Limit:: (i) Shares tendered by a Holder or withheld by the Company in payment of the exercise price of an Option; (ii) Shares tendered by the Holder or withheld by the Company to satisfy any tax withholding obligation with respect to an Award; and (iii) Shares subject to Stock Appreciation Rights that are not issued in connection with the stock settlement of the Stock Appreciation Rights on exercise thereof. Notwithstanding anything to the contrary contained herein, Shares purchased on the open market with the cash proceeds from the exercise of Options shall not be added back to the Share Limit and shall not be available for future grants of Awards. Any Shares repurchased by the Company under Section 8.4 hereof at the same price paid by the Holder or a lower price so that such Shares are returned to the Company will again be available for Awards. The payment of Dividend Equivalents in cash in conjunction with any outstanding Awards shall not be counted against the Shares available for issuance under the Plan. Notwithstanding the provisions of this Section 3.1(b), no Shares may again be optioned, granted or awarded if such action would cause an Incentive Stock Option to fail to qualify as an incentive stock option under Section 422 of the Code.

(c) Substitute Awards shall not reduce the Shares authorized for grant under the Plan. Additionally, in the event that a company acquired by the Company or any Affiliate or with which the Company or any Affiliate combines has shares available under a pre-existing plan approved by its stockholders and not adopted in contemplation of such acquisition or combination, the shares available for grant pursuant to the terms of such pre-existing plan (as adjusted, to the extent appropriate, using the exchange ratio or other adjustment or valuation ratio or formula used in such acquisition or combination to determine the consideration payable to the holders of common stock of the entities party to such acquisition or combination) may be used for Awards under the Plan and shall not reduce the Shares authorized for grant under the Plan; provided that Awards using such available shares shall not be made after the date awards or grants could have been made under the terms of the pre-existing plan, absent the acquisition or combination, and shall only be made to individuals who were not employed by or providing services to the Company or its Affiliates immediately prior to such acquisition or combination.

3.2 Stock Distributed. Any Shares distributed pursuant to an Award may consist, in whole or in part, of authorized and unissued Common Stock, treasury Common Stock or Common Stock purchased on the open market.

3.3 Limitation on Number of Shares Subject to Awards to Non-Employee Directors. The maximum aggregate value of Awards (with such value determined as of the date of grant under Applicable Accounting Standards) that may be granted to any Non-Employee Director during any calendar year shall be $2,000,000.

ARTICLE 4.

GRANTING OF AWARDS

4.1 Participation. The Administrator may, from time to time, select from among all Eligible Individuals, those to whom an Award shall be granted and shall determine the nature and amount of each Award, which shall not be inconsistent with the requirements of the Plan. Except as provided in Section 4.6 hereof regarding the grant of Awards pursuant to the Non-Employee Director Equity Compensation Policy, no Eligible Individual shall have any right to be granted an Award pursuant to the Plan.

4.2 Award Agreement. Each Award shall be evidenced by an Award Agreement that sets forth the terms, conditions and limitations for such Award, which may include the term of the Award, the provisions applicable in the event of the Holder's Termination of Service, and the Company's authority to unilaterally or bilaterally amend, modify, suspend, cancel or rescind an Award. Award Agreements evidencing Awards intended to qualify as Performance-Based Compensation shall contain such terms and conditions as may be necessary to meet the applicable provisions of Section 162(m) of the Code. Award Agreements evidencing Incentive Stock Options shall contain such terms and conditions as may be necessary to meet the applicable provisions of Section 422 of the Code.

4.3 Limitations Applicable to Section 16 Persons. Notwithstanding any other provision of the Plan, the Plan, and any Award granted or awarded to any individual who is then subject to Section 16 of the Exchange Act, shall be subject to any additional limitations set forth in any applicable exemptive rule under Section 16 of the Exchange Act (including Rule 16b-3 of the Exchange Act and any amendments thereto) that are requirements for the application of such exemptive rule. To the extent permitted by Applicable Law, the Plan and Awards granted or awarded hereunder shall be deemed amended to the extent necessary to conform to such applicable exemptive rule.

4.4 At-Will Service; Voluntary Participation. Nothing in the Plan or in any Program or Award Agreement hereunder shall confer upon any Holder any right to continue in the employ of, or as a Director or Consultant for, the Company or any Affiliate, or shall interfere with or restrict in any way the rights of the Company and any Affiliate, which rights are hereby expressly reserved, to discharge any Holder at any time for any reason whatsoever, with or without cause, and with or without notice, or to terminate or change all other terms and conditions of employment or engagement, except to the extent expressly provided otherwise in a written agreement between the Holder and the Company or any Affiliate. Participation by each Holder in the Plan shall be voluntary and nothing in the Plan shall be construed as mandating that any Eligible Individual shall participate in the Plan.

4.5 Foreign Holders. Notwithstanding any provision of the Plan to the contrary, in order to comply with the laws in countries other than the United States in which the Company and its Affiliates operate or have Employees, Non-Employee Directors or Consultants, or in order to comply with the requirements of any foreign securities exchange, the Administrator, in its sole discretion, shall have the power and authority to: (a) determine which Affiliates shall be covered by the Plan; (b) determine which Eligible Individuals outside the United States are eligible to participate in the Plan; (c) modify the terms and conditions of any Award granted to Eligible Individuals outside the United States to comply with applicable foreign laws or listing requirements of any such foreign securities exchange; (d) establish subplans and modify exercise procedures and other terms and procedures, to the extent such actions may be necessary or advisable (any such subplans and/or modifications shall be attached to the Plan as appendices); provided, however, that no such subplans and/or modifications shall

increase the share limitations contained in Sections 3.1 and 3.3 hereof; and (e) take any action, before or after an Award is made, that it deems advisable to obtain approval or comply with any necessary local governmental regulatory exemptions or approvals or listing requirements of any such foreign securities exchange. Notwithstanding the foregoing, the Administrator may not take any actions hereunder, and no Awards shall be granted, that would violate the Code, the Exchange Act, the Securities Act, any other securities law or governing statute, the rules of the securities exchange or automated quotation system on which the Shares are listed, quoted or traded or any other Applicable Law. For purposes of the Plan, all references to foreign laws, rules, regulations or taxes shall be references to the laws, rules, regulations and taxes of any applicable jurisdiction other than the United States or a political subdivision thereof.

4.6 Non-Employee Director Awards. The Administrator may, in its discretion, provide that Awards granted to Non-Employee Directors shall be granted pursuant to a written non-discretionary formula established by the Administrator (the "Non-Employee Director Equity Compensation Policy"), subject to the limitations of the Plan. The Non-Employee Director Equity Compensation Policy shall set forth the type of Award(s) to be granted to Non-Employee Directors, the number of Shares to be subject to Non-Employee Director Awards, the conditions on which such Awards shall be granted, become exercisable and/or payable and expire, and such other terms and conditions as the Administrator shall determine in its discretion. The Non-Employee Director Equity Compensation Policy may be modified by the Administrator from time to time in its discretion.

4.7 Stand-Alone and Tandem Awards. Awards granted pursuant to the Plan may, in the sole discretion of the Administrator, be granted either alone, in addition to, or in tandem with, any other Award granted pursuant to the Plan. Awards granted in addition to or in tandem with other Awards may be granted either at the same time as or at a different time from the grant of such other Awards.

ARTICLE 5.

PROVISIONS APPLICABLE TO AWARDS INTENDED TO QUALIFY AS PERFORMANCE-BASED COMPENSATION.

5.1 Purpose. The Committee, in its sole discretion, may determine at the time an Award is granted or at any time thereafter whether any Award is intended to qualify as Performance-Based Compensation. If the Committee, in its sole discretion, decides to grant such an Award to an Eligible Individual that is intended to qualify as Performance-Based Compensation, then the provisions of this Article 5 shall control over any contrary provision contained in the Plan. The Administrator may in its sole discretion grant Awards to other Eligible Individuals that are based on Performance Criteria or Performance Goals but that do not satisfy the requirements of this Article 5 and that are not intended to qualify as Performance-Based Compensation. Unless otherwise specified by the Committee at the time of grant, the Performance Criteria with respect to an Award intended to be Performance-Based Compensation payable to a Covered Employee shall be determined on the basis of Applicable Accounting Standards.

5.2 Applicability. The grant of an Award to an Eligible Individual for a particular Performance Period shall not require the grant of an Award to such Eligible Individual in any subsequent Performance Period and the grant of an Award to any one Eligible Individual shall not require the grant of an Award to any other Eligible Individual in such period or in any other period.

5.3 Types of Awards. Notwithstanding anything in the Plan to the contrary, the Committee may grant any Award to an Eligible Individual intended to qualify as Performance-Based Compensation, including, without limitation, Restricted Stock the restrictions with respect to which lapse upon the attainment of specified Performance Goals, Restricted Stock Units that vest and become payable upon the attainment of specified Performance Goals and any Performance Awards described in Article 10 hereof that vest or become exercisable or payable upon the attainment of one or more specified Performance Goals.

5.4 Procedures with Respect to Performance-Based Awards. To the extent necessary to comply with the requirements of Section 162(m)(4)(C) of the Code, with respect to any Award granted to one or more Eligible Individuals which is intended to qualify as Performance-Based Compensation, no later than ninety (90) days following the commencement of any Performance Period or any designated fiscal period or period of service

(or such earlier time as may be required under Section 162(m) of the Code), the Committee shall, in writing, (a) designate one or more Eligible Individuals, (b) select the Performance Criteria applicable to the Performance Period, (c) establish the Performance Goals, and amounts of such Awards, as applicable, which may be earned for such Performance Period based on the Performance Goals, and (d) specify the relationship between the Performance Criteria and the Performance Goals and the amounts of such Awards, as applicable, to be earned by each Covered Employee for such Performance Period. Following the completion of each Performance Period, the Committee shall certify in writing whether and the extent to which the applicable Performance Goals have been achieved for such Performance Period. In determining the amount earned under such Awards, unless otherwise provided in an applicable Program or Award Agreement, the Committee shall have the right to reduce or eliminate (but not to increase) the amount payable at a given level of performance to take into account additional factors that the Committee may deem relevant, including the assessment of individual or corporate performance for the Performance Period.

5.5 Payment of Performance-Based Awards. Unless otherwise provided in the applicable Program or Award Agreement or pursuant to Section 14.2 hereof and only to the extent otherwise permitted by Section 162(m)(4)(C) of the Code, as to an Award that is intended to qualify as Performance-Based Compensation, the Holder must be employed by the Company or an Affiliate throughout the applicable Performance Period. Unless otherwise provided in the applicable Performance Goals, Program or Award Agreement, a Holder shall be eligible to receive payment pursuant to such Awards for a Performance Period only if and to the extent the Performance Goals for such applicable Performance Period are achieved.

5.6 Additional Limitations. Notwithstanding any other provision of the Plan and except as otherwise determined by the Administrator, any Award which is granted to an Eligible Individual and is intended to qualify as Performance-Based Compensation shall be subject to any additional limitations set forth in Section 162(m) of the Code or any regulations or rulings issued thereunder that are requirements for qualification as Performance-Based Compensation, and the Plan, the Program and the Award Agreement shall be deemed amended to the extent necessary to conform to such requirements.

ARTICLE 6.

GRANTING OF OPTIONS

6.1 Granting of Options to Eligible Individuals. The Administrator is authorized to grant Options to Eligible Individuals from time to time, in its sole discretion, on such terms and conditions as it may determine which shall not be inconsistent with the Plan.

6.2 Qualification of Incentive Stock Options. No Incentive Stock Option shall be granted to any person who is not an Employee of the Company or any subsidiary corporation (as defined in Section 424(f) of the Code) of the Company. No person who qualifies as a Greater Than 10% Stockholder may be granted an Incentive Stock Option unless such Incentive Stock Option conforms to the applicable provisions of Section 422 of the Code. Any Incentive Stock Option granted under the Plan may be modified by the Administrator, with the consent of the Holder, to disqualify such Option from treatment as an "incentive stock option" under Section 422 of the Code. To the extent that the aggregate fair market value of stock with respect to which "incentive stock options" (within the meaning of Section 422 of the Code, but without regard to Section 422(d) of the Code) are exercisable for the first time by a Holder during any calendar year under the Plan, and all other plans of the Company and any subsidiary or parent corporation thereof (each as defined in Section 424(f) and (e) of the Code, respectively), exceeds $100,000, the Options shall be treated as Non-Qualified Stock Options to the extent required by Section 422 of the Code. The rule set forth in the preceding sentence shall be applied by taking Options and other "incentive stock options" into account in the order in which they were granted and the Fair Market Value of stock shall be determined as of the time the respective options were granted. In addition, to the extent that any Options otherwise fail to qualify as Incentive Stock Options, such Options shall be treated as Nonqualified Stock Options.

6.3 Option Exercise Price. Except as provided in Article 14 hereof, the exercise price per Share subject to each Option shall be set by the Administrator, but shall not be less than one hundred percent (100%) of the Fair Market Value of a Share on the date the Option is granted (or, as to Incentive Stock Options, on the date

the Option is modified, extended or renewed for purposes of Section 424(h) of the Code). In addition, in the case of Incentive Stock Options granted to a Greater Than 10% Stockholder, such price shall not be less than one hundred ten percent (110%) of the Fair Market Value of a Share on the date the Option is granted (or the date the Option is modified, extended or renewed for purposes of Section 424(h) of the Code).

6.4 Option Term. The term of each Option (the "Option Term") shall be set by the Administrator in its sole discretion; provided, however, that the Option Term shall not be more than ten (10) years from the date the Option is granted, or five (5) years from the date an Incentive Stock Option is granted to a Greater Than 10% Stockholder. The Administrator shall determine the time period, including the time period following a Termination of Service, during which the Holder has the right to exercise the vested Options, which time period may not extend beyond the last day of the Option Term. Except as limited by the requirements of Section 409A or Section 422 of the Code and regulations and rulings thereunder, the Administrator may extend the Option Term of any outstanding Option, may extend the time period during which vested Options may be exercised following any Termination of Service of the Holder, and may amend any other term or condition of such Option relating to such a Termination of Service.

6.5 Option Vesting.

(a) The period during which the right to exercise, in whole or in part, an Option vests in the Holder shall be set by the Administrator and the Administrator may determine that an Option may not be exercised in whole or in part for a specified period after it is granted. Such vesting may be based on service with the Company or any Affiliate, any of the Performance Criteria, or any other criteria selected by the Administrator. At any time after the grant of an Option, the Administrator may, in its sole discretion and subject to whatever terms and conditions it selects, accelerate the vesting of the Option, including following a Termination of Service; provided, that in no event shall an Option become exercisable following its expiration, termination or forfeiture.

(b) No portion of an Option which is unexercisable at a Holder's Termination of Service shall thereafter become exercisable, except as may be otherwise provided by the Administrator either in the Program, the Award Agreement or by action of the Administrator following the grant of the Option.

6.6 Substitute Awards. Notwithstanding the foregoing provisions of this Article 6 to the contrary, in the case of an Option that is a Substitute Award, the price per share of the shares subject to such Option may be less than the Fair Market Value per share on the date of grant; provided that the excess of: (a) the aggregate Fair Market Value (as of the date such Substitute Award is granted) of the shares subject to the Substitute Award, over (b) the aggregate exercise price thereof does not exceed the excess of: (x) the aggregate fair market value (as of the time immediately preceding the transaction giving rise to the Substitute Award, such fair market value to be determined by the Administrator) of the shares of the predecessor entity that were subject to the grant assumed or substituted for by the Company, over (y) the aggregate exercise price of such shares.

6.7 Substitution of Stock Appreciation Rights. The Administrator may provide in the applicable Program or the Award Agreement evidencing the grant of an Option that the Administrator, in its sole discretion, shall have the right to substitute a Stock Appreciation Right for such Option at any time prior to or upon exercise of such Option; provided that such Stock Appreciation Right shall be exercisable with respect to the same number of Shares for which such substituted Option would have been exercisable, and shall also have the same exercise price, vesting schedule and remaining Option Term as the substituted Option.

ARTICLE 7.

EXERCISE OF OPTIONS

7.1 Partial Exercise. An exercisable Option may be exercised in whole or in part. However, an Option shall not be exercisable with respect to fractional Shares and the Administrator may require that, by the terms of the Option, a partial exercise must be with respect to a minimum number of Shares.

7.2 Manner of Exercise. All or a portion of an exercisable Option shall be deemed exercised upon delivery of all of the following to the Secretary of the Company, or such other person or entity designated by the Administrator, or his, her or its office, as applicable:

(a) A written or electronic notice complying with the applicable rules established by the Administrator stating that the Option, or a portion thereof, is exercised. The notice shall be signed by the Holder or other person then entitled to exercise the Option or such portion of the Option;

(b) Such representations and documents as the Administrator, in its sole discretion, deems necessary or advisable to effect compliance with all Applicable Law. The Administrator may, in its sole discretion, also take whatever additional actions it deems appropriate to effect such compliance including, without limitation, placing legends on share certificates and issuing stop-transfer notices to agents and registrars;

(c) In the event that the Option shall be exercised pursuant to Section 12.3 hereof by any person or persons other than the Holder, appropriate proof of the right of such person or persons to exercise the Option, as determined in the sole discretion of the Administrator; and

(d) Full payment of the exercise price and applicable withholding taxes to the stock administrator of the Company for the shares with respect to which the Option, or portion thereof, is exercised, in a manner permitted by Section 12.1 and 12.2 hereof.

7.3 Notification Regarding Disposition. The Holder shall give the Company prompt written or electronic notice of any disposition of Shares acquired by exercise of an Incentive Stock Option which occurs within (a) two (2) years from the date of granting (including the date the Option is modified, extended or renewed for purposes of Section 424(h) of the Code) of such Option to such Holder, or (b) one (1) year after the transfer of such shares to such Holder.

ARTICLE 8.

AWARD OF RESTRICTED STOCK

8.1 Award of Restricted Stock.

(a) The Administrator is authorized to grant Restricted Stock to Eligible Individuals, and shall determine the terms and conditions, including the restrictions applicable to each award of Restricted Stock, which terms and conditions shall not be inconsistent with the Plan, and may impose such conditions on the issuance of such Restricted Stock as it deems appropriate.

(b) The Administrator shall establish the purchase price, if any, and form of payment for Restricted Stock; provided, however, that if a purchase price is charged, such purchase price shall be no less than the par value, if any, of the Shares to be purchased, unless otherwise permitted by Applicable Law. In all cases, legal consideration shall be required for each issuance of Restricted Stock to the extent required by Applicable Law.

8.2 Rights as Stockholders. Subject to Section 8.4 hereof, upon issuance of Restricted Stock, the Holder shall have, unless otherwise provided by the Administrator, all the rights of a stockholder with respect to said Shares, subject to the restrictions in the applicable Program or in each individual Award Agreement, including the right to receive all dividends and other distributions paid or made with respect to the Shares; provided, however, that, in the sole discretion of the Administrator, any extraordinary distributions with respect to the Shares shall be subject to the restrictions set forth in Section 8.3 hereof. In addition, with respect to a share of Restricted Stock with performance-based vesting, dividends which are paid prior to vesting shall only be paid out to the Holder to the extent that performance-based vesting conditions are subsequently satisfied and the share of Restricted Stock vests.

8.3 Restrictions. All shares of Restricted Stock (including any shares received by Holders thereof with respect to shares of Restricted Stock as a result of stock dividends, stock splits or any other form of recapitalization) shall, in the terms of the applicable Program or in each individual Award Agreement, be subject

to such restrictions and vesting requirements as the Administrator shall provide. Such restrictions may include, without limitation, restrictions concerning voting rights and transferability and such restrictions may lapse separately or in combination at such times and pursuant to such circumstances or based on such criteria as selected by the Administrator, including, without limitation, criteria based on the Holder's duration of employment, directorship or consultancy with the Company, the Performance Criteria, Company or Affiliate performance, individual performance or other criteria selected by the Administrator. By action taken after the Restricted Stock is issued, the Administrator may, on such terms and conditions as it may determine to be appropriate, accelerate the vesting of such Restricted Stock by removing any or all of the restrictions imposed by the terms of the Program and/or the Award Agreement. Restricted Stock may not be sold or encumbered until all restrictions are terminated or expire.

8.4 Repurchase or Forfeiture of Restricted Stock. Except as otherwise determined by the Administrator at the time of the grant of the Award or thereafter, if no price was paid by the Holder for the Restricted Stock, upon a Termination of Service during the applicable restriction period, the Holder's rights in unvested Restricted Stock then subject to restrictions shall lapse, and such Restricted Stock shall be surrendered to the Company and cancelled without consideration. If a price was paid by the Holder for the Restricted Stock, upon a Termination of Service during the applicable restriction period, the Company shall have the right to repurchase from the Holder the unvested Restricted Stock then subject to restrictions at a cash price per share equal to the price paid by the Holder for such Restricted Stock or such other amount as may be specified in the Program or the Award Agreement. Notwithstanding the foregoing, the Administrator in its sole discretion may provide that in the event of certain events, including a Change in Control, the Holder's death, retirement or disability or any other specified Termination of Service or any other event, the Holder's rights in unvested Restricted Stock shall not lapse, such Restricted Stock shall vest and, if applicable, the Company shall not have a right of repurchase.

8.5 Certificates for Restricted Stock. Restricted Stock granted pursuant to the Plan may be evidenced in such manner as the Administrator shall determine. Certificates or book entries evidencing shares of Restricted Stock must include an appropriate legend referring to the terms, conditions, and restrictions applicable to such Restricted Stock. The Company may, in its sole discretion, (a) retain physical possession of any stock certificate evidencing shares of Restricted Stock until the restrictions thereon shall have lapsed and/or (b) require that the stock certificates evidencing shares of Restricted Stock be held in custody by a designated escrow agent (which may but need not be the Company) until the restrictions thereon shall have lapsed, and that the Holder deliver a stock power, endorsed in blank, relating to such Restricted Stock.

8.6 Section 83(b) Election. If a Holder makes an election under Section 83(b) of the Code to be taxed with respect to the Restricted Stock as of the date of transfer of the Restricted Stock rather than as of the date or dates upon which the Holder would otherwise be taxable under Section 83(a) of the Code, the Holder shall be required to deliver a copy of such election to the Company promptly after filing such election with the Internal Revenue Service.

ARTICLE 9.
AWARD OF RESTRICTED STOCK UNITS

9.1 Grant of Restricted Stock Units. The Administrator is authorized to grant Awards of Restricted Stock Units to any Eligible Individual selected by the Administrator in such amounts and subject to such terms and conditions as determined by the Administrator.

9.2 Term. Except as otherwise provided herein, the term of a Restricted Stock Unit award shall be set by the Administrator in its sole discretion.

9.3 Purchase Price. The Administrator shall specify the purchase price, if any, to be paid by the Holder to the Company with respect to any Restricted Stock Unit award; provided, however, that value of the consideration shall not be less than the par value of a Share, unless otherwise permitted by Applicable Law.

9.4 Vesting of Restricted Stock Units. At the time of grant, the Administrator shall specify the date or dates on which the Restricted Stock Units shall become fully vested and nonforfeitable, and may specify such conditions to vesting as it deems appropriate, including, without limitation, vesting based upon the Holder's

duration of service to the Company or any Affiliate, one or more Performance Criteria, Company performance, individual performance or other specific criteria, in each case on a specified date or dates or over any period or periods, as determined by the Administrator.

9.5 Maturity and Payment. At the time of grant, the Administrator shall specify the maturity date applicable to each grant of Restricted Stock Units which shall be no earlier than the vesting date or dates of the Award and may be determined at the election of the Holder (if permitted by the applicable Award Agreement); provided that, except as otherwise determined by the Administrator, set forth in any applicable Award Agreement, and subject to compliance with Section 409A of the Code, in no event shall the maturity date relating to each Restricted Stock Unit occur following the later of (a) the fifteenth (15th) day of the third (3rd) month following the end of calendar year in which the Restricted Stock Unit vests; or (b) the fifteenth (15th) day of the third (3rd) month following the end of the Company's fiscal year in which the Restricted Stock Unit vests. On the maturity date, the Company shall, subject to Section 12.4(e) hereof, transfer to the Holder one unrestricted, fully transferable Share for each Restricted Stock Unit scheduled to be paid out on such date and not previously forfeited, or, in the sole discretion of the Administrator, an amount in cash equal to the Fair Market Value of such shares on the maturity date or a combination of cash and Common Stock as determined by the Administrator.

9.6 Payment upon Termination of Service. An Award of Restricted Stock Units shall only be payable while the Holder is an Employee, a Consultant or a member of the Board, as applicable; provided, however, that the Administrator, in its sole and absolute discretion may provide (in an Award Agreement or otherwise) that a Restricted Stock Unit award may be paid subsequent to a Termination of Service in certain events, including a Change in Control, the Holder's death, retirement or disability or any other specified Termination of Service.

9.7 No Rights as a Stockholder. Unless otherwise determined by the Administrator, a Holder who is awarded Restricted Stock Units shall possess no incidents of ownership with respect to the Shares represented by such Restricted Stock Units, unless and until the same are transferred to the Holder pursuant to the terms of this Plan and the Award Agreement.

9.8 Dividend Equivalents. Subject to Section 10.2 hereof, the Administrator may, in its sole discretion, provide that Dividend Equivalents shall be earned by a Holder of Restricted Stock Units based on dividends declared on the Common Stock, to be credited as of dividend payment dates during the period between the date an Award of Restricted Stock Units is granted to a Holder and the maturity date of such Award.

ARTICLE 10.

AWARD OF PERFORMANCE AWARDS, DIVIDEND EQUIVALENTS, STOCK PAYMENTS, DEFERRED STOCK, DEFERRED STOCK UNITS

10.1 Performance Awards.

(a) The Administrator is authorized to grant Performance Awards, including Awards of Performance Stock Units, to any Eligible Individual and to determine whether such Performance Awards shall be Performance-Based Compensation. The value of Performance Awards, including Performance Stock Units, may be linked to any one or more of the Performance Criteria or other specific criteria determined by the Administrator, in each case on a specified date or dates or over any period or periods determined by the Administrator. Performance Awards, including Performance Stock Unit awards may be paid in cash, Shares, or a combination of cash and Shares, as determined by the Administrator.

(b) Without limiting Section 10.1(a) hereof, the Administrator may grant Performance Awards to any Eligible Individual in the form of a cash bonus payable upon the attainment of objective Performance Goals, or such other criteria, whether or not objective, which are established by the Administrator, in each case on a specified date or dates or over any period or periods determined by the Administrator. Any such bonuses paid to a Holder which are intended to be Performance-Based Compensation shall be based upon objectively determinable bonus formulas established in accordance with the provisions of Article 5 hereof.

10.2 Dividend Equivalents.

(a) Dividend Equivalents may be granted by the Administrator based on dividends declared on the Common Stock, to be credited as of dividend payment dates during the period between the date an Award is granted to a Holder and the date such Award vests, is exercised, is distributed or expires, as determined by the Administrator. Such Dividend Equivalents shall be converted to cash or additional shares of Common Stock by such formula and at such time and subject to such limitations as may be determined by the Administrator.

(b) Notwithstanding the foregoing, no Dividend Equivalents shall be payable with respect to Options or Stock Appreciation Rights.

10.3 Stock Payments. The Administrator is authorized to make Stock Payments to any Eligible Individual. The number or value of Shares of any Stock Payment shall be determined by the Administrator and may be based upon one or more Performance Criteria or any other specific criteria, including service to the Company or any Affiliate, determined by the Administrator. Shares underlying a Stock Payment which is subject to a vesting schedule or other conditions or criteria set by the Administrator will not be issued until those conditions have been satisfied. Unless otherwise provided by the Administrator, a Holder of a Stock Payment shall have no rights as a Company stockholder with respect to such Stock Payment until such time as the Stock Payment has vested and the Shares underlying the Award have been issued to the Holder. Stock Payments may, but are not required to, be made in lieu of base salary, bonus, fees or other cash compensation otherwise payable to such Eligible Individual.

10.4 Deferred Stock. The Administrator is authorized to grant Deferred Stock to any Eligible Individual. The number of shares of Deferred Stock shall be determined by the Administrator and may (but is not required to) be based on one or more Performance Criteria or other specific criteria, including service to the Company or any Affiliate, as the Administrator determines, in each case on a specified date or dates or over any period or periods determined by the Administrator. Shares underlying a Deferred Stock award which is subject to a vesting schedule or other conditions or criteria set by the Administrator will be issued on the vesting date(s) or date(s) that those conditions and criteria have been satisfied, as applicable. Unless otherwise provided by the Administrator, a Holder of Deferred Stock shall have no rights as a Company stockholder with respect to such Deferred Stock until such time as the Award has vested and any other applicable conditions and/or criteria have been satisfied and the Shares underlying the Award have been issued to the Holder.

10.5 Deferred Stock Units. The Administrator is authorized to grant Deferred Stock Units to any Eligible Individual. The number of Deferred Stock Units shall be determined by the Administrator and may (but is not required to) be based on one or more Performance Criteria or other specific criteria, including service to the Company or any Affiliate, as the Administrator determines, in each case on a specified date or dates or over any period or periods determined by the Administrator. Each Deferred Stock Unit shall entitle the Holder thereof to receive one share of Common Stock on the date the Deferred Stock Unit becomes vested or upon a specified settlement date thereafter (which settlement date may (but is not required to) be the date of the Holder's Termination of Service). Shares underlying a Deferred Stock Unit award which is subject to a vesting schedule or other conditions or criteria set by the Administrator will not be issued until on or following the date that those conditions and criteria have been satisfied. Unless otherwise provided by the Administrator, a Holder of Deferred Stock Units shall have no rights as a Company stockholder with respect to such Deferred Stock Units until such time as the Award has vested and any other applicable conditions and/or criteria have been satisfied and the Shares underlying the Award have been issued to the Holder.

10.6 Term. The term of a Performance Award, Dividend Equivalent award, Stock Payment award, Deferred Stock award and/or Deferred Stock Unit award shall be set by the Administrator in its sole discretion.

10.7 Purchase Price. The Administrator may establish the purchase price of a Performance Award, Shares distributed as a Stock Payment award, shares of Deferred Stock or Shares distributed pursuant to a Deferred Stock Unit award; provided, however, that value of the consideration shall not be less than the par value of a Share, unless otherwise permitted by Applicable Law.

10.8 Termination of Service. A Performance Award, Stock Payment award, Dividend Equivalent award, Deferred Stock award and/or Deferred Stock Unit award is distributable only while the Holder is an Employee, Director or Consultant, as applicable. The Administrator, however, in its sole discretion may provide that the Performance Award, Dividend Equivalent award, Stock Payment award, Deferred Stock award and/or Deferred Stock Unit award may be distributed subsequent to a Termination of Service in certain events, including a Change in Control, the Holder's death, retirement or disability or any other specified Termination of Service.

ARTICLE 11.

AWARD OF STOCK APPRECIATION RIGHTS

11.1 Grant of Stock Appreciation Rights.

(a) The Administrator is authorized to grant Stock Appreciation Rights to Eligible Individuals from time to time, in its sole discretion, on such terms and conditions as it may determine consistent with the Plan.

(b) A Stock Appreciation Right shall entitle the Holder (or other person entitled to exercise the Stock Appreciation Right pursuant to the Plan) to exercise all or a specified portion of the Stock Appreciation Right (to the extent then exercisable pursuant to its terms) and to receive from the Company an amount determined by multiplying the difference obtained by subtracting the exercise price per Share of the Stock Appreciation Right from the Fair Market Value on the date of exercise of the Stock Appreciation Right by the number of Shares with respect to which the Stock Appreciation Right shall have been exercised, subject to any limitations the Administrator may impose. Except as described in (c) below or in Section 14.2 hereof, the exercise price per Share subject to each Stock Appreciation Right shall be set by the Administrator, but shall not be less than one hundred percent (100%) of the Fair Market Value on the date the Stock Appreciation Right is granted.

(c) Notwithstanding the foregoing provisions of Section 11.1(b) hereof to the contrary, in the case of a Stock Appreciation Right that is a Substitute Award, the price per Share of the Shares subject to such Stock Appreciation Right may be less than one hundred percent (100%) of the Fair Market Value per share on the date of grant; provided that the excess of: (i) the aggregate Fair Market Value (as of the date such Substitute Award is granted) of the shares subject to the Substitute Award, over (ii) the aggregate exercise price thereof does not exceed the excess of: (x) the aggregate fair market value (as of the time immediately preceding the transaction giving rise to the Substitute Award, such fair market value to be determined by the Administrator) of the shares of the predecessor entity that were subject to the grant assumed or substituted for by the Company, over (y) the aggregate exercise price of such shares.

11.2 Stock Appreciation Right Vesting.

(a) The period during which the right to exercise, in whole or in part, a Stock Appreciation Right vests in the Holder shall be set by the Administrator and the Administrator may determine that a Stock Appreciation Right may not be exercised in whole or in part for a specified period after it is granted. Such vesting may be based on service with the Company or any Affiliate, any of the Performance Criteria or any other criteria selected by the Administrator. At any time after grant of a Stock Appreciation Right, the Administrator may, in its sole discretion and subject to whatever terms and conditions it selects, accelerate the period during which a Stock Appreciation Right vests.

(b) No portion of a Stock Appreciation Right which is unexercisable at Termination of Service shall thereafter become exercisable, except as may be otherwise provided by the Administrator either in the applicable Program or Award Agreement or by action of the Administrator following the grant of the Stock Appreciation Right, including following a Termination of Service; provided, that in no event shall a Stock Appreciation Right become exercisable following its expiration, termination or forfeiture.

11.3 Manner of Exercise. All or a portion of an exercisable Stock Appreciation Right shall be deemed exercised upon delivery of all of the following to the stock administrator of the Company, or such other person or entity designated by the Administrator, or his, her or its office, as applicable:

(a) A written or electronic notice complying with the applicable rules established by the Administrator stating that the Stock Appreciation Right, or a portion thereof, is exercised. The notice shall be signed by the Holder or other person then entitled to exercise the Stock Appreciation Right or such portion of the Stock Appreciation Right;

(b) Such representations and documents as the Administrator, in its sole discretion, deems necessary or advisable to effect compliance with all applicable provisions of the Securities Act and any other federal, state or foreign securities laws or regulations. The Administrator may, in its sole discretion, also take whatever additional actions it deems appropriate to effect such compliance; and

(c) In the event that the Stock Appreciation Right shall be exercised pursuant to this Section 11.3 hereof by any person or persons other than the Holder, appropriate proof of the right of such person or persons to exercise the Stock Appreciation Right.

11.4 Stock Appreciation Right Term. The term of each Stock Appreciation Right (the "Stock Appreciation Right Term") shall be set by the Administrator in its sole discretion; provided, however, that the term shall not be more than ten (10) years from the date the Stock Appreciation Right is granted. The Administrator shall determine the time period, including the time period following a Termination of Service, during which the Holder has the right to exercise the vested Stock Appreciation Rights, which time period may not extend beyond the expiration date of the Stock Appreciation Right Term. Except as limited by the requirements of Section 409A of the Code and regulations and rulings thereunder or the first sentence of this Section 11.4, the Administrator may extend the Stock Appreciation Right Term of any outstanding Stock Appreciation Right, may extend the time period during which vested Stock Appreciation Rights may be exercised following any Termination of Service of the Holder, and may amend any other term or condition of such Stock Appreciation Right relating to such a Termination of Service.

11.5 Payment. Payment of the amounts payable with respect to Stock Appreciation Rights pursuant to this Article 11 shall be in cash, Shares (based on its Fair Market Value as of the date the Stock Appreciation Right is exercised), or a combination of both, as determined by the Administrator.

ARTICLE 12.

ADDITIONAL TERMS OF AWARDS

12.1 Payment. The Administrator shall determine the methods by which payments by any Holder with respect to any Awards granted under the Plan shall be made, including, without limitation: (a) cash or check, (b) Shares (including, in the case of payment of the exercise price of an Award, Shares issuable pursuant to the exercise of the Award) or Shares held for such period of time as may be required by the Administrator in order to avoid adverse accounting consequences, in each case, having a Fair Market Value on the date of delivery equal to the aggregate payments required, (c) delivery of a written or electronic notice that the Holder has placed a market sell order with a broker with respect to Shares then issuable upon exercise or vesting of an Award, and that the broker has been directed to pay a sufficient portion of the net proceeds of the sale to the Company in satisfaction of the aggregate payments required; provided that payment of such proceeds is then made to the Company upon settlement of such sale, or (d) other form of legal consideration acceptable to the Administrator. The Administrator shall also determine the methods by which Shares shall be delivered or deemed to be delivered to Holders. Notwithstanding any other provision of the Plan to the contrary, no Holder who is a Director or an "executive officer" of the Company within the meaning of Section 13(k) of the Exchange Act shall be permitted to make payment with respect to any Awards granted under the Plan, or continue any extension of credit with respect to such payment, with a loan from the Company or a loan arranged by the Company in violation of Section 13(k) of the Exchange Act.

12.2 Tax Withholding. The Company or any Affiliate shall have the authority and the right to deduct or withhold, or require a Holder to remit to the Company, an amount sufficient to satisfy federal, state, local and foreign taxes (including the Holder's FICA or employment tax obligation) required by law to be withheld with respect to any taxable event concerning a Holder arising as a result of the Plan. The Administrator may in its sole discretion and in satisfaction of the foregoing requirement allow a Holder to satisfy such obligations by any payment means described in Section 12.1 hereof, including without limitation, by allowing such Holder to elect to have the Company withhold Shares otherwise issuable under an Award (or allow the surrender of Shares). The number of Shares which may be so withheld or surrendered shall be limited to the number of Shares which have a Fair Market Value on the date of withholding or repurchase equal to the aggregate amount of such liabilities based on the minimum statutory withholding rates for federal, state, local and foreign income tax and payroll tax purposes that are applicable to such supplemental taxable income. The Administrator shall determine the fair market value of the Shares, consistent with applicable provisions of the Code, for tax withholding obligations due in connection with a broker-assisted cashless Option or Stock Appreciation Right exercise involving the sale of Shares to pay the Option or Stock Appreciation Right exercise price or any tax withholding obligation.

12.3 Transferability of Awards.

(a) Except as otherwise provided in Sections 12.3(b) and 12.3(c) hereof:

(i) No Award under the Plan may be sold, pledged, assigned or transferred in any manner other than by will or the laws of descent and distribution or, subject to the consent of the Administrator, pursuant to a DRO, unless and until such Award has been exercised, or the Shares underlying such Award have been issued, and all restrictions applicable to such Shares have lapsed;

(ii) No Award or interest or right therein shall be liable for the debts, contracts or engagements of the Holder or the Holder's successors in interest or shall be subject to disposition by transfer, alienation, anticipation, pledge, hypothecation, encumbrance, assignment or any other means whether such disposition be voluntary or involuntary or by operation of law by judgment, levy, attachment, garnishment or any other legal or equitable proceedings (including bankruptcy) unless and until such Award has been exercised, or the Shares underlying such Award have been issued, and all restrictions applicable to such Shares have lapsed, and any attempted disposition of an Award prior to the satisfaction of these conditions shall be null and void and of no effect, except to the extent that such disposition is permitted by clause (i) of this provision; and

(iii) During the lifetime of the Holder, only the Holder may exercise an Award (or any portion thereof) granted to such Holder under the Plan, unless it has been disposed of pursuant to a DRO; after the death of the Holder, any exercisable portion of an Award may, prior to the time when such portion becomes unexercisable under the Plan or the applicable Program or Award Agreement, be exercised by the Holder's personal representative or by any person empowered to do so under the deceased Holder's will or under the then applicable laws of descent and distribution.

(b) Notwithstanding Section 12.3(a) hereof, the Administrator, in its sole discretion, may determine to permit a Holder or a Permitted Transferee of such Holder to transfer an Award other than an Incentive Stock Option (unless such Incentive Stock Option is to become a Non-Qualified Stock Option) to any one or more Permitted Transferees, subject to the following terms and conditions: (i) an Award transferred to a Permitted Transferee shall not be assignable or transferable by the Permitted Transferee (other than to another Permitted Transferee of the applicable Holder) other than by will or the laws of descent and distribution; (ii) an Award transferred to a Permitted Transferee shall continue to be subject to all the terms and conditions of the Award as applicable to the original Holder (other than the ability to further transfer the Award); and (iii) the Holder (or transferring Permitted Transferee) and the Permitted Transferee shall execute any and all documents requested by the Administrator, including, without limitation documents to (A) confirm the status of the transferee as a Permitted Transferee, (B) satisfy any requirements for an exemption for the transfer under applicable federal, state and foreign securities laws and (C) evidence the transfer.

(c) Notwithstanding Section 12.3(a) hereof, a Holder may, in the manner determined by the Administrator, designate a beneficiary to exercise the rights of the Holder and to receive any distribution with respect to any Award upon the Holder's death. A beneficiary, legal guardian, legal representative, or other person

claiming any rights pursuant to the Plan is subject to all terms and conditions of the Plan and any Program or Award Agreement applicable to the Holder, except to the extent the Plan, the Program and the Award Agreement otherwise provide, and to any additional restrictions deemed necessary or appropriate by the Administrator. If the Holder is married or a domestic partner in a domestic partnership qualified under Applicable Law and resides in a community property state, a designation of a person other than the Holder's spouse or domestic partner, as applicable, as his or her beneficiary with respect to more than fifty percent (50%) of the Holder's interest in the Award shall not be effective without the prior written or electronic consent of the Holder's spouse or domestic partner, as applicable. If no beneficiary has been designated or survives the Holder, payment shall be made to the person entitled thereto pursuant to the Holder's will or the laws of descent and distribution. Subject to the foregoing, a beneficiary designation may be changed or revoked by a Holder at any time; provided that the change or revocation is filed with the Administrator prior to the Holder's death.

12.4 Conditions to Issuance of Shares.

(a) Notwithstanding anything herein to the contrary, the Company shall not be required to issue or deliver any certificates or make any book entries evidencing Shares pursuant to the exercise of any Award, unless and until the Board or the Committee has determined, with advice of counsel, that the issuance of such shares is in compliance with all Applicable Law, and the Shares are covered by an effective registration statement or applicable exemption from registration. In addition to the terms and conditions provided herein, the Board or the Committee may require that a Holder make such reasonable covenants, agreements, and representations as the Board or the Committee, in its discretion, deems advisable in order to comply with Applicable Law.

(b) All Share certificates delivered pursuant to the Plan and all Shares issued pursuant to book entry procedures are subject to any stop-transfer orders and other restrictions as the Administrator deems necessary or advisable to comply with Applicable Law. The Administrator may place legends on any Share certificate or book entry to reference restrictions applicable to the Shares.

(c) The Administrator shall have the right to require any Holder to comply with any timing or other restrictions with respect to the settlement, distribution or exercise of any Award, including a window-period limitation, as may be imposed in the sole discretion of the Administrator.

(d) No fractional Shares shall be issued and the Administrator shall determine, in its sole discretion, whether cash shall be given in lieu of fractional Shares or whether such fractional Shares shall be eliminated by rounding down.

(e) Notwithstanding any other provision of the Plan, unless otherwise determined by the Administrator or required by any Applicable Law, the Company shall not deliver to any Holder certificates evidencing Shares issued in connection with any Award and instead such Shares shall be recorded in the books of the Company (or, as applicable, its transfer agent or stock plan administrator).

12.5 Forfeiture and Claw-Back Provisions. Pursuant to its general authority to determine the terms and conditions applicable to Awards under the Plan, the Administrator shall have the right to provide, in an Award Agreement or otherwise, or to require a Holder to agree by separate written or electronic instrument, that:

(a) (i) Any proceeds, gains or other economic benefit actually or constructively received by the Holder upon any receipt or exercise of the Award, or upon the receipt or resale of any Shares underlying the Award, must be paid to the Company, and (ii) the Award shall terminate and any unexercised portion of the Award (whether or not vested) shall be forfeited, if (x) a Termination of Service occurs prior to a specified date, or within a specified time period following receipt or exercise of the Award, or (y) the Holder at any time, or during a specified time period, engages in any activity in competition with the Company, or which is inimical, contrary or harmful to the interests of the Company, as further defined by the Administrator or (z) the Holder incurs a Termination of Service for "cause" (as such term is defined in the sole discretion of the Administrator, or as set forth in a written agreement relating to such Award between the Company and the Holder); and

(b) All Awards (including any proceeds, gains or other economic benefit actually or constructively received by the Holder upon any receipt or exercise of any Award or upon the receipt or resale of any Shares underlying the Award) shall be subject to the provisions of any claw-back policy implemented by the Company, including, without limitation, any claw-back policy adopted to comply with the requirements of Applicable Law, including, without limitation, the Dodd-Frank Wall Street Reform and Consumer Protection Act and any rules or regulations promulgated thereunder, to the extent set forth in such claw-back policy and/or in the applicable Award Agreement.

12.6 Repricing. The Administrator shall, without the approval of the stockholders of the Company, have the authority to (i) amend any outstanding Option or Stock Appreciation Right to reduce its price per Share, or (ii) cancel any Option or Stock Appreciation Right in exchange for cash or another Award when the Option or Stock Appreciation Right price per Share exceeds the Fair Market Value of the underlying Shares, in its sole discretion.

12.7 Leave of Absence. Unless the Administrator provides otherwise, vesting of Awards granted hereunder shall be suspended during any unpaid leave of absence. A Holder shall not cease to be considered an Employee, Non-Employee Director or Consultant, as applicable, in the case of any (a) leave of absence approved by the Company, (b) transfer between locations of the Company or between the Company and any of its Affiliates or any successor thereof, or (c) change in status (Employee to Director, Employee to Consultant, etc.), provided that such change does not affect the specific terms applying to the Holder's Award.

ARTICLE 13.

ADMINISTRATION

13.1 Administrator. The Committee (or another committee or a subcommittee of the Board or the Compensation Committee of the Board assuming the functions of the Committee under the Plan) shall administer the Plan (except as otherwise permitted herein) and, unless otherwise determined by the Board, shall consist solely of two or more Non-Employee Directors appointed by and holding office at the pleasure of the Board, each of whom is intended to qualify as both a "non-employee director" as defined by Rule 16b-3 of the Exchange Act or any successor rule, an "outside director" for purposes of Section 162(m) of the Code and an "independent director" under the rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded; provided that any action taken by the Committee shall be valid and effective, whether or not members of the Committee at the time of such action are later determined not to have satisfied the requirements for membership set forth in this Section 13.l or otherwise provided in any charter of the Committee. Except as may otherwise be provided in any charter of the Committee, appointment of Committee members shall be effective upon acceptance of appointment. Committee members may resign at any time by delivering written or electronic notice to the Board. Vacancies in the Committee may only be filled by the Board. Notwithstanding the foregoing, (a) the full Board, acting by a majority of its members in office, shall conduct the general administration of the Plan with respect to Awards granted to Non-Employee Directors and, with respect to such Awards, the terms "Administrator" and "Committee" as used in the Plan shall be deemed to refer to the Board and (b) the Board or Committee may delegate its authority hereunder to the extent permitted by Section 13.6 hereof.

13.2 Duties and Powers of Administrator. It shall be the duty of the Administrator to conduct the general administration of the Plan in accordance with its provisions. The Administrator shall have the power to interpret the Plan, the Program and the Award Agreement, and to adopt such rules for the administration, interpretation and application of the Plan as are not inconsistent therewith, to interpret, amend or revoke any such rules and to amend any Program or Award Agreement; provided that the rights or obligations of the Holder of the Award that is the subject of any such Program or Award Agreement are not affected materially and adversely by such amendment, unless the consent of the Holder is obtained or such amendment is otherwise permitted under Section 14.10 hereof. Any such grant or award under the Plan need not be the same with respect to each Holder. Any such interpretations and rules with respect to Incentive Stock Options shall be consistent with the provisions of Section 422 of the Code. In its sole discretion, the Board may at any time and from time to time exercise any and all rights and duties of the Committee under the Plan except with respect to matters which under Rule 16b-3 under the Exchange Act or any successor rule, or Section 162(m) of the Code, or any regulations or rules issued thereunder, or the rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded are required to be determined in the sole discretion of the Committee.

13.3 Action by the Committee. Unless otherwise established by the Board or in any charter of the Committee, a majority of the Committee shall constitute a quorum and the acts of a majority of the members present at any meeting at which a quorum is present, and acts approved in writing by all members of the Committee in lieu of a meeting, shall be deemed the acts of the Committee. Each member of the Committee is entitled to, in good faith, rely or act upon any report or other information furnished to that member by any officer or other employee of the Company or any Affiliate, the Company's independent certified public accountants, or any executive compensation consultant or other professional retained by the Company to assist in the administration of the Plan.

13.4 Authority of Administrator. Subject to the Company's Bylaws, the Committee's Charter and any specific designation in the Plan, the Administrator has the exclusive power, authority and sole discretion to:

(a) Designate Eligible Individuals to receive Awards;

(b) Determine the type or types of Awards to be granted to each Eligible Individual;

(c) Determine the number of Awards to be granted and the number of Shares to which an Award will relate;

(d) Determine the terms and conditions of any Award granted pursuant to the Plan, including, but not limited to, the exercise price, grant price, or purchase price, any performance criteria, any restrictions or limitations on the Award, any schedule for vesting, lapse of forfeiture restrictions or restrictions on the exercisability of an Award, and accelerations or waivers thereof, and any provisions related to non-competition and recapture of gain on an Award, based in each case on such considerations as the Administrator in its sole discretion determines;

(e) Determine whether, to what extent, and pursuant to what circumstances an Award may be settled in, or the exercise price of an Award may be paid in cash, Shares, other Awards, or other property, or an Award may be canceled, forfeited, or surrendered;

(f) Prescribe the form of each Award Agreement, which need not be identical for each Holder;

(g) Decide all other matters that must be determined in connection with an Award;

(h) Establish, adopt, or revise any rules and regulations as it may deem necessary or advisable to administer the Plan;

(i) Interpret the terms of, and any matter arising pursuant to, the Plan, any Program or any Award Agreement;

(j) Make all other decisions and determinations that may be required pursuant to the Plan or as the Administrator deems necessary or advisable to administer the Plan; and

(k) Accelerate wholly or partially the vesting or lapse of restrictions of any Award or portion thereof at any time after the grant of an Award, subject to whatever terms and conditions it selects and Sections 3.4 and 14.2(d) hereof.

13.5 Decisions Binding. The Administrator's interpretation of the Plan, any Awards granted pursuant to the Plan, any Program, any Award Agreement and all decisions and determinations by the Administrator with respect to the Plan are final, binding, and conclusive on all parties.

13.6 Delegation of Authority. To the extent permitted by Applicable Law, the Board or Committee may from time to time delegate to a committee of one or more members of the Board or one or more officers of the Company the authority to grant or amend Awards or to take other administrative actions pursuant to Article 13; provided, however, that in no event shall an officer of the Company be delegated the authority to grant

awards to, or amend awards held by, the following individuals: (a) individuals who are subject to Section 16 of the Exchange Act, (b) Covered Employees, or (c) officers of the Company (or Directors) to whom authority to grant or amend Awards has been delegated hereunder; provided, further, that any delegation of administrative authority shall only be permitted to the extent it is permissible under Section 162(m) of the Code and Applicable Law. Any delegation hereunder shall be subject to the restrictions and limits that the Board or Committee specifies at the time of such delegation, and the Board may at any time rescind the authority so delegated or appoint a new delegatee. At all times, the delegatee appointed under this Section 13.6 hereof shall serve in such capacity at the pleasure of the Board and the Committee.

ARTICLE 14.

MISCELLANEOUS PROVISIONS

14.1 Amendment, Suspension or Termination of the Plan. Except as otherwise provided in this Section 14.1, the Plan may be wholly or partially amended or otherwise modified, suspended or terminated at any time or from time to time by the Board or the Committee. However, without approval of the Company's stockholders given within twelve (12) months before or after the action by the Administrator, no action of the Administrator may, except as provided in Section 14.2 hereof, increase the limits imposed in Section 3.1 hereof on the maximum number of shares which may be issued under the Plan. Except as provided in Section 14.10 hereof, no amendment, suspension or termination of the Plan shall, without the consent of the Holder, materially and adversely affect any rights or obligations under any Award theretofore granted or awarded, unless the Award itself otherwise expressly so provides. No Awards may be granted or awarded during any period of suspension or after termination of the Plan, and in no event may any Incentive Stock Option be granted under the Plan after the tenth (10^{th}) anniversary of the Effective Date.

14.2 Changes in Common Stock or Assets of the Company, Acquisition or Liquidation of the Company and Other Corporate Events.

(a) In the event of any stock dividend, stock split, combination or exchange of shares, merger, consolidation or other distribution (other than normal cash dividends) of Company assets to stockholders, or any other change affecting the shares of the Company's stock or the share price of the Company's stock other than an Equity Restructuring, the Administrator may make equitable adjustments, if any, to reflect such change with respect to (i) the aggregate number and kind of shares that may be issued under the Plan (including, but not limited to, adjustments of the limitations in Section 3.1 hereof on the maximum number and kind of shares which may be issued under the Plan); (ii) the number and kind of shares of Common Stock (or other securities or property) subject to outstanding Awards; (iii) the number and kind of shares of Common Stock (or other securities or property) for which grants are subsequently to be made to new and continuing Non-Employee Directors pursuant to Section 4.6 hereof; (iv) the terms and conditions of any outstanding Awards (including, without limitation, any applicable performance targets or criteria with respect thereto); and (v) the grant or exercise price per share for any outstanding Awards under the Plan. Any adjustment affecting an Award intended as Performance-Based Compensation shall be made consistent with the requirements of Section 162(m) of the Code.

(b) In the event of any transaction or event described in Section 14.2(a) hereof or any unusual or nonrecurring transactions or events affecting the Company, any Affiliate of the Company, or the financial statements of the Company or any Affiliate, or of changes in Applicable Law, the Administrator, in its sole discretion, and on such terms and conditions as it deems appropriate, either by the terms of the Award or by action taken prior to the occurrence of such transaction or event and either automatically or upon the Holder's request, is hereby authorized to take any one or more of the following actions whenever the Administrator determines that such action is appropriate in order to prevent dilution or enlargement of the benefits or potential benefits intended to be made available under the Plan or with respect to any Award under the Plan, to facilitate such transactions or events or to give effect to such changes in laws, regulations or principles:

(i) To provide for either (A) termination of any such Award in exchange for an amount of cash and/or other property, if any, equal to the amount that would have been attained upon the exercise of such Award or realization of the Holder's rights (and, for the avoidance of doubt, if as of the date of the occurrence of the transaction or event described in this Section 14.2 the Administrator determines in good faith that no amount

would have been attained upon the exercise of such Award or realization of the Holder's rights, then such Award may be terminated by the Company without payment) or (B) the replacement of such Award with other rights or property selected by the Administrator in its sole discretion having an aggregate value not exceeding the amount that could have been attained upon the exercise of such Award or realization of the Holder's rights had such Award been currently exercisable or payable or fully vested;

(ii) To provide that such Award be assumed by the successor or survivor corporation, or a parent or subsidiary thereof, or shall be substituted for by similar options, rights or awards covering the stock of the successor or survivor corporation, or a parent or subsidiary thereof, with appropriate adjustments as to the number and kind of shares and prices;

(iii) To make adjustments in the number and type of shares of the Company's stock (or other securities or property) subject to outstanding Awards, and in the number and kind of outstanding Restricted Stock or Deferred Stock and/or in the terms and conditions of (including the grant or exercise price), and the criteria included in, outstanding Awards and Awards which may be granted in the future;

(iv) To provide that such Award shall be exercisable or payable or fully vested with respect to all shares covered thereby, notwithstanding anything to the contrary in the Plan or the applicable Program or Award Agreement; and

(v) To provide that the Award cannot vest, be exercised or become payable after such event.

(c) In connection with the occurrence of any Equity Restructuring, and notwithstanding anything to the contrary in Sections 14.2(a) and 14.2(b) hereof:

(i) The number and type of securities subject to each outstanding Award and the exercise price or grant price thereof, if applicable, shall be equitably adjusted; and/or

(ii) The Administrator shall make such equitable adjustments, if any, as the Administrator in its discretion may deem appropriate to reflect such Equity Restructuring with respect to the aggregate number and kind of shares that may be issued under the Plan (including, but not limited to, adjustments of the limitations in Section 3.1 hereof on the maximum number and kind of shares which may be issued under the Plan).

The adjustments provided under this Section 14.2(c) shall be nondiscretionary and shall be final and binding on the affected Holder and the Company.

(d) Change in Control.

(i) In the event of a Change in Control, each outstanding Award shall be assumed or an equivalent Award substituted by the successor corporation or a parent or subsidiary of the successor corporation, in each case, as determined by the Administrator.

(ii) In the event that the successor corporation in a Change in Control and its parents and subsidiaries refuse to assume or substitute for any Award in accordance with Section 14.2(d)(i) hereof, each such non-assumed/substituted Award, except for any Performance Awards, shall become fully vested and, as applicable, exercisable and shall be deemed exercised, immediately prior to the consummation of such transaction, and all forfeiture restrictions on any or all such Awards shall lapse at such time. For the avoidance of doubt, the vesting of any Performance Awards not assumed in a Change in Control will not be automatically accelerated pursuant to this Section 14.2(d)(ii) and will instead vest pursuant to the terms and conditions of the applicable Award Agreement upon a Change in Control where the successor corporation and its parents and subsidiaries refuse to assume or substitute for any Award in accordance with Section 14.2(d)(i) hereof. If an Award vests and, as applicable, is exercised in lieu of assumption or substitution in connection with a Change in Control, the Administrator shall notify the Holder of such vesting and any applicable exercise period, and the Award shall terminate upon the Change in Control. For the avoidance of doubt, if the value of an Award that is terminated in connection with this Section 14.2(d)(ii) is zero or negative at the time of such Change in Control, such Award shall be terminated upon the Change in Control without payment of consideration therefor.

(iii) Notwithstanding anything to the contrary, in the event that, within the twelve (12) month period immediately following a Change in Control, a Holder experiences a Termination of Service by the Company for other than Cause or by a Holder for Good Reason, then the vesting and, if applicable, exercisability of that number of Shares equal to one hundred percent (100%) of the then-unvested Shares subject to the outstanding Awards held by such Holder shall accelerate upon the date of such Termination of Service.

(e) The Administrator may, in its sole discretion, include such further provisions and limitations in any Award, agreement or certificate, as it may deem equitable and in the best interests of the Company that are not inconsistent with the provisions of the Plan.

(f) With respect to Awards which are granted to Covered Employees and are intended to qualify as Performance-Based Compensation, no adjustment or action described in this Section 14.2 or in any other provision of the Plan shall be authorized to the extent that such adjustment or action would cause such Award to fail to so qualify as Performance-Based Compensation, unless the Administrator determines that the Award should not so qualify. No adjustment or action described in this Section 14.2 or in any other provision of the Plan shall be authorized to the extent that such adjustment or action would cause the Plan to violate Section 422(b)(1) of the Code. Furthermore, no such adjustment or action shall be authorized to the extent such adjustment or action would result in short-swing profits liability under Section 16 of the Exchange Act or violate the exemptive conditions of Rule 16b-3 of the Exchange Act unless the Administrator determines that the Award is not to comply with such exemptive conditions.

(g) The existence of the Plan, the Program, the Award Agreement and the Awards granted hereunder shall not affect or restrict in any way the right or power of the Company or the stockholders of the Company to make or authorize any adjustment, recapitalization, reorganization or other change in the Company's capital structure or its business, any merger or consolidation of the Company, any issue of stock or of options, warrants or rights to purchase stock or of bonds, debentures, preferred or prior preference stocks whose rights are superior to or affect the Common Stock or the rights thereof or which are convertible into or exchangeable for Common Stock, or the dissolution or liquidation of the Company, or any sale or transfer of all or any part of its assets or business, or any other corporate act or proceeding, whether of a similar character or otherwise.

(h) In the event of any pending stock dividend, stock split, combination or exchange of shares, merger, consolidation or other distribution (other than normal cash dividends) of Company assets to stockholders, or any other change affecting the Shares or the share price of the Common Stock including any Equity Restructuring, for reasons of administrative convenience, the Company in its sole discretion may refuse to permit the exercise of any Award during a period of thirty (30) days prior to the consummation of any such transaction.

14.3 Approval of Plan by Stockholders. The Plan will be submitted for the approval of the Company's stockholders within twelve (12) months after the date of the Board's initial adoption of the Plan. Awards may be granted or awarded prior to such stockholder approval; provided that such Awards shall not be exercisable, shall not vest and the restrictions thereon shall not lapse and no Shares shall be issued pursuant thereto prior to the time when the Plan is approved by the stockholders; and provided, further, that if such approval has not been obtained at the end of said twelve (12) month period, all Awards previously granted or awarded under the Plan shall thereupon be canceled and become null and void.

14.4 No Stockholders Rights. Except as otherwise provided herein, a Holder shall have none of the rights of a stockholder with respect to Shares covered by any Award until the Holder becomes the record owner of such Shares.

14.5 Paperless Administration. In the event that the Company establishes, for itself or using the services of a third party, an automated system for the documentation, granting or exercise of Awards, such as a system using an internet website or interactive voice response, then the paperless documentation, granting or exercise of Awards by a Holder may be permitted through the use of such an automated system.

14.6 Effect of Plan upon Other Compensation Plans. The adoption of the Plan shall not affect any other compensation or incentive plans in effect for the Company or any Affiliate. Nothing in the Plan shall be construed to limit the right of the Company or any Affiliate: (a) to establish any other forms of incentives or compensation for Employees, Directors or Consultants of the Company or any Affiliate, or (b) to grant or assume options or other rights or awards otherwise than under the Plan in connection with any proper corporate purpose including without limitation, the grant or assumption of options in connection with the acquisition by purchase, lease, merger, consolidation or otherwise, of the business, stock or assets of any corporation, partnership, limited liability company, firm or association.

14.7 Compliance with Laws. The Plan, the granting and vesting of Awards under the Plan and the issuance and delivery of Shares and the payment of money under the Plan or under Awards granted or awarded hereunder are subject to compliance with all Applicable Law, and to such approvals by any listing, regulatory or governmental authority as may, in the opinion of counsel for the Company, be necessary or advisable in connection therewith. Any securities delivered under the Plan shall be subject to such restrictions, and the person acquiring such securities shall, if requested by the Company, provide such assurances and representations to the Company as the Company may deem necessary or desirable to assure compliance with all Applicable Law. To the extent permitted by Applicable Law, the Plan and Awards granted or awarded hereunder shall be deemed amended to the extent necessary to conform to such Applicable Law.

14.8 Titles and Headings, References to Sections of the Code or Exchange Act. The titles and headings of the Sections in the Plan are for convenience of reference only and, in the event of any conflict, the text of the Plan, rather than such titles or headings, shall control. References to sections of the Code or the Exchange Act shall include any amendment or successor thereto.

14.9 Governing Law. The Plan and any agreements hereunder shall be administered, interpreted and enforced under the internal laws of the State of Delaware without regard to conflicts of laws thereof or of any other jurisdiction.

14.10 Section 409A. To the extent that the Administrator determines that any Award granted under the Plan is subject to Section 409A of the Code, the Program pursuant to which such Award is granted and the Award Agreement evidencing such Award shall incorporate the terms and conditions required by Section 409A of the Code. To the extent applicable, the Plan, the Program and any Award Agreements shall be interpreted in accordance with Section 409A of the Code and Department of Treasury regulations and other interpretive guidance issued thereunder, including without limitation any such regulations or other guidance that may be issued after the Effective Date. Notwithstanding any provision of the Plan to the contrary, in the event that following the Effective Date the Administrator determines that any Award may be subject to Section 409A of the Code and related Department of Treasury guidance (including such Department of Treasury guidance as may be issued after the Effective Date), the Administrator may adopt such amendments to the Plan and the applicable Program and Award Agreement or adopt other policies and procedures (including amendments, policies and procedures with retroactive effect), or take any other actions, that the Administrator determines are necessary or appropriate to (a) exempt the Award from Section 409A of the Code and/or preserve the intended tax treatment of the benefits provided with respect to the Award, or (b) comply with the requirements of Section 409A of the Code and related Department of Treasury guidance and thereby avoid the application of any penalty taxes under such Section.

14.11 No Rights to Awards. No Eligible Individual or other person shall have any claim to be granted any Award pursuant to the Plan, and neither the Company nor the Administrator is obligated to treat Eligible Individuals, Holders or any other persons uniformly.

14.12 Unfunded Status of Awards. The Plan is intended to be an "unfunded" plan for incentive compensation. With respect to any payments not yet made to a Holder pursuant to an Award, nothing contained in the Plan or any Program or Award Agreement shall give the Holder any rights that are greater than those of a general creditor of the Company or any Affiliate.

14.13 Indemnification. To the extent allowable pursuant to Applicable Law, each member of the Committee or of the Board and any officer or other employee to whom authority to administer any component of the Plan is delegated shall be indemnified and held harmless by the Company from any loss, cost, liability, or expense that may be imposed upon or reasonably incurred by such member in connection with or resulting from any claim, action, suit, or proceeding to which he or she may be a party or in which he or she may be involved by reason of any action or failure to act pursuant to the Plan and against and from any and all amounts paid by him or her in satisfaction of judgment in such action, suit, or proceeding against him or her; provided he or she gives the Company an opportunity, at its own expense, to handle and defend the same before he or she undertakes to handle and defend it on his or her own behalf. The foregoing right of indemnification shall not be exclusive of any other rights of indemnification to which such persons may be entitled pursuant to the Company's Certificate of Incorporation or Bylaws, as a matter of law, or otherwise, or any power that the Company may have to indemnify them or hold them harmless.

14.14 Relationship to other Benefits. No payment pursuant to the Plan shall be taken into account in determining any benefits under any pension, retirement, savings, profit sharing, group insurance, welfare or other benefit plan of the Company or any Affiliate except to the extent otherwise expressly provided in writing in such other plan or an agreement thereunder.

14.15 Expenses. The expenses of administering the Plan shall be borne by the Company and its Affiliates.

Exhibit 10.4

SYNLOGIC, INC

2017 STOCK INCENTIVE PLAN

1. DEFINITIONS.

Unless otherwise specified or unless the context otherwise requires, the following terms, as used in this Synlogic, Inc. 2017 Stock Incentive Plan, have the following meanings:

Administrator means the Board of Directors, unless it has delegated power to act on its behalf to the Committee, in which case the Administrator means the Committee.

Affiliate means a corporation or other entity which, for purposes of Section 424 of the Code, is a parent or subsidiary of the Company, direct or indirect.

Agreement means an agreement between the Company and a Participant delivered pursuant to the Plan and pertaining to a Stock Right, in such form as the Administrator shall approve.

Board of Directors means the Board of Directors of the Company.

Cause means, with respect to a Participant (a) dishonesty with respect to the Company or any Affiliate, (b) insubordination, substantial malfeasance or non-feasance of duty, (c) unauthorized disclosure of confidential information, (d) breach by the Participant of any provision of any employment, consulting, advisory, nondisclosure, non-competition or similar agreement between the Participant and the Company or any Affiliate, and (e) conduct substantially prejudicial to the business of the Company or any Affiliate; provided, however, that any provision in an agreement between the Participant and the Company or an Affiliate, which contains a conflicting definition of Cause for termination and which is in effect at the time of such termination, shall supersede this definition with respect to that Participant. The determination of the Administrator as to the existence of Cause will be conclusive on the Participant and the Company.

Code means the United States Internal Revenue Code of 1986, as amended including any successor statute, regulation and guidance thereto.

Committee means the committee of the Board of Directors to which the Board of Directors has delegated power to act under or pursuant to the provisions of the Plan.

Common Stock means shares of the Company's common stock, $0.001 par value per share.

Company means Synlogic, Inc., a Delaware corporation.

Consultant means any natural person who is an advisor or consultant that provides bona fide services to the Company or its Affiliates, provided that such services are not in connection with the offer or sale of securities in a capital raising transaction, and do not directly or indirectly promote or maintain a market for the Company's or its Affiliates' securities.

Disability or Disabled means permanent and total disability as defined in Section 22(e)(3) of the Code.

Employee means any employee of the Company or of an Affiliate (including, without limitation, an employee who is also serving as an officer or director of the Company or of an Affiliate), designated by the Administrator to be eligible to be granted one or more Stock Rights under the Plan.

Fair Market Value of a Share of Common Stock means:

(1) If the Common Stock is listed on a national securities exchange or traded in the over-the-counter market and sales prices are regularly reported for the Common Stock, the closing or, if not applicable, the last price of the Common Stock on the composite tape or other comparable reporting system for the trading day on the applicable date and if such applicable date is not a trading day, the last market trading day prior to such date;

(2) If the Common Stock is not traded on a national securities exchange but is traded on the over-the-counter market, if sales prices are not regularly reported for the Common Stock for the trading day referred to in clause (1), and if bid and asked prices for the Common Stock are regularly reported, the mean between the bid and the asked price for the Common Stock at the close of trading in the over-the-counter market for the most recent trading day on which Common Stock was traded on the applicable date and if such applicable date is not a trading day, the last market trading day prior to such date; and

(3) If the Common Stock is neither listed on a national securities exchange nor traded in the over-the-counter market, such value as the Administrator, in good faith, shall determine.

ISO means an option intended to qualify as an incentive stock option under Section 422 of the Code.

Non-Qualified Option means an option which is not intended to qualify as an ISO.

Option means an ISO or Non-Qualified Option granted under the Plan.

Participant means an Employee, director or Consultant of the Company or an Affiliate to whom one or more Stock Rights are granted under the Plan. As used herein, "Participant" shall include "Participant's Survivors" where the context requires.

Plan means this Synlogic, Inc. 2017 Stock Incentive Plan.

Securities Act means the Securities Act of 1933, as amended.

Shares means shares of the Common Stock as to which Stock Rights have been or may be granted under the Plan or any shares of capital stock into which the Shares are changed or for which they are exchanged within the provisions of Paragraph 3 of the Plan. The Shares issued under the Plan may be authorized and unissued shares or shares held by the Company in its treasury, or both.

Stock-Based Award means a grant by the Company under the Plan of an equity award or an equity based award which is not an Option or a Stock Grant.

Stock Grant means a grant by the Company of Shares under the Plan.

Stock Right means a right to Shares or the value of Shares of the Company granted pursuant to the Plan – an ISO, a Non-Qualified Option, a Stock Grant or a Stock-Based Award.

Survivor means a deceased Participant's legal representatives and/or any person or persons who acquired the Participant's rights to a Stock Right by will or by the laws of descent and distribution.

2. PURPOSES OF THE PLAN.

The Plan is intended to encourage ownership of Shares by Employees and directors of and certain Consultants to the Company and its Affiliates in order to attract and retain such people, to induce them to work for the benefit of the Company or of an Affiliate and to provide additional incentive for them to promote the success of the Company or of an Affiliate. The Plan provides for the granting of ISOs, Non-Qualified Options, Stock Grants and Stock-Based Awards.

3. SHARES SUBJECT TO THE PLAN.

(a) The number of Shares which may be issued from time to time pursuant to this Plan shall be 1,753,061 shares of Common Stock, or the equivalent of such number of Shares after the Administrator, in its sole discretion, has interpreted the effect of any stock split, stock dividend, combination, recapitalization or similar transaction in accordance with Paragraph 24 of the Plan.

(b) If an Option ceases to be "outstanding", in whole or in part (other than by exercise), or if the Company shall reacquire at not more than its original issuance price any Shares issued pursuant to a Stock Grant or Stock-Based Award, or if any Stock Right expires or

is forfeited, cancelled, or otherwise terminated or results in any Shares not being issued, the unissued or reacquired Shares which were subject to such Stock Right shall again be available for issuance from time to time pursuant to this Plan. Notwithstanding the foregoing, if a Stock Right is exercised, in whole or in part, by tender of Shares or if the Company or an Affiliate's tax withholding obligation is satisfied by withholding Shares, the number of Shares deemed to have been issued under the Plan for purposes of the limitation set forth in Paragraph 3(a) above shall be the number of Shares that were subject to the Stock Right or portion thereof, and not the net number of Shares actually issued. However, in the case of ISOs, the foregoing provisions shall be subject to any limitations under the Code.

4. ADMINISTRATION OF THE PLAN.

The Administrator of the Plan will be the Board of Directors, except to the extent the Board of Directors delegates its authority to the Committee, in which case the Committee shall be the Administrator. Subject to the provisions of the Plan, the Administrator is authorized to:

(a) Interpret the provisions of the Plan and all Stock Rights and to make all rules and determinations which it deems necessary or advisable for the administration of the Plan;

(b) Determine which Employees, directors and Consultants shall be granted Stock Rights;

(c) Determine the number of Shares for which a Stock Right or Stock Rights shall be granted;

(d) Specify the terms and conditions upon which a Stock Right or Stock Rights may be granted;

(e) Amend any term or condition of any outstanding Stock Right, including, without limitation, to reduce or increase the exercise price or purchase price**,** accelerate the vesting schedule or extend the expiration date, provided that (i) such term or condition as amended is permitted by the Plan; (ii) any such amendment shall not impair the rights of a Participant under any Stock Right previously granted without such Participant's consent or in the event of death of the Participant the Participant's Survivors; and (iii) any such amendment shall be made only after the Administrator determines whether such amendment would cause any adverse tax consequences to the Participant, including, but not limited to, the annual vesting limitation contained in Section 422(d) of the Code and described in Paragraph 6(b)(iv) below with respect to ISOs and pursuant to Section 409A of the Code;

(f) Buy out for a payment in cash or Shares, a Stock Right previously granted and/or cancel any such Stock Right and grant in substitution therefor other Stock Rights, covering the same or a different number of Shares and having an exercise price or purchase price per share which may be lower or higher than the exercise price or purchase price of the cancelled Stock Right, based on such terms and conditions as the Administrator shall establish and the Participant shall accept; and

(g) Adopt any sub-plans applicable to residents of any specified jurisdiction as it deems necessary or appropriate in order to comply with or take advantage of any tax or other laws applicable to the Company, any Affiliate or to Participants or to otherwise facilitate the administration of the Plan, which sub-plans may include additional restrictions or conditions applicable to Stock Rights or Shares issuable pursuant to a Stock Right;

provided, however, that all such interpretations, rules, determinations, terms and conditions shall be made and prescribed in the context of not causing any adverse tax consequences under Section 409A of the Code and preserving the tax status under Section 422 of the Code of those Options which are designated as ISOs. Subject to the foregoing, the interpretation and construction by the Administrator of any provisions of the Plan or of any Stock Right granted under it shall be final, unless otherwise determined by the Board of Directors, if the Administrator is the Committee. In addition, if the Administrator is the Committee, the Board of Directors may take any action under the Plan that would otherwise be the responsibility of the Committee.

To the extent permitted under applicable law, the Board of Directors or the Committee may allocate all or any portion of its responsibilities and powers to any one or more of its members and may delegate all or any portion of its responsibilities and powers to any other person selected by it. The Board of Directors or the Committee may revoke any such allocation or delegation at any time.

5. ELIGIBILITY FOR PARTICIPATION.

The Administrator will, in its sole discretion, name the Participants in the Plan; provided, however, that each Participant must be an Employee, director or Consultant of the Company or of an Affiliate at the time a Stock Right is granted, or have received a grant of a profits interest from Synlogic, LLC as an employee of or consultant to Synlogic, LLC and be granted a Stock Right as a former employee of or consultant to Synlogic, LLC pursuant to the terms of the merger of Synlogic, LLC into the Company. Notwithstanding the foregoing, the Administrator may authorize the grant of a Stock Right to a person not then an Employee, director or Consultant of the Company or of an Affiliate; provided, however, that the actual grant of such Stock Right shall be conditioned upon such person becoming eligible to become a Participant at or prior to the time of the execution of the Agreement evidencing such Stock Right. ISOs may be granted only to Employees who are deemed to be residents of the United States for tax purposes. Non-Qualified Options, Stock Grants and Stock-Based Awards may be granted to any Employee, director or Consultant of the Company or an Affiliate. The granting of any Stock Right to any individual shall neither entitle that individual to, nor disqualify him or her from, participation in any other grant of Stock Rights or any grant under any other benefit plan established by the Company or any Affiliate for Employees, directors or Consultants.

6. TERMS AND CONDITIONS OF OPTIONS.

Each Option shall be set forth in writing in an Option Agreement, duly executed by the Company and, to the extent required by law or requested by the Company, by the Participant. The Administrator may provide that Options be granted subject to such terms and conditions, consistent with the terms and conditions specifically required under this Plan, as the

Administrator may deem appropriate including, without limitation, subsequent approval by the shareholders of the Company of this Plan or any amendments thereto. The Option Agreements shall be subject to at least the following terms and conditions:

(a) Non-Qualified Options: Each Option intended to be a Non-Qualified Option shall be subject to the terms and conditions which the Administrator determines to be appropriate and in the best interest of the Company, subject to the following minimum standards for any such Non-Qualified Option:

(i) Exercise Price: Each Option Agreement shall state the exercise price (per share) of the Shares covered by each Option, which exercise price shall be determined by the Administrator and shall be at least equal to the Fair Market Value per share of the Common Stock on the date of grant of the Option.

(ii) Number of Shares: Each Option Agreement shall state the number of Shares to which it pertains.

(iii) Option Periods: Each Option Agreement shall state the date or dates on which it first is exercisable and the date after which it may no longer be exercised, and may provide that the Option rights accrue or become exercisable in installments over a period of months or years, or upon the occurrence of certain conditions or the attainment of stated goals or events.

(iv) Option Conditions: Exercise of any Option may be conditioned upon the Participant's execution of a Share purchase agreement in form satisfactory to the Administrator providing for certain protections for the Company and its other shareholders, including requirements that:

A. The Participant's or the Participant's Survivors' right to sell or transfer the Shares may be restricted; and

B. The Participant or the Participant's Survivors may be required to execute letters of investment intent and must also acknowledge that the Shares will bear legends noting any applicable restrictions.

(v) Term of Option: Each Option shall terminate not more than ten years from the date of the grant or at such earlier time as the Option Agreement may provide.

(b) ISOs: Each Option intended to be an ISO shall be issued only to an Employee who is deemed to be a resident of the United States for tax purposes, and shall be subject to the following terms and conditions, with such additional restrictions or changes as the Administrator determines are appropriate but not in conflict with Section 422 of the Code and relevant regulations and rulings of the Internal Revenue Service:

(i) Minimum standards: The ISO shall meet the minimum standards required of Non-Qualified Options, as described in Paragraph 6(a) above, except clause (i) thereunder.

(ii) Exercise Price: Immediately before the ISO is granted, if the Participant owns, directly or by reason of the applicable attribution rules in Section 424(d) of the Code:

A. Ten percent (10%) or less of the total combined voting power of all classes of stock of the Company or an Affiliate, the exercise price per share of the Shares covered by each ISO shall not be less than one hundred percent (100%) of the Fair Market Value per share of the Common Stock on the date of grant of the Option; or

B. More than ten percent (10%) of the total combined voting power of all classes of stock of the Company or an Affiliate, the exercise price per share of the Shares covered by each ISO shall not be less than one hundred ten percent (110%) of the Fair Market Value per share of the Common Stock on the date of grant of the Option.

(iii) Term of Option: For Participants who own:

A. Ten percent (10%) or less of the total combined voting power of all classes of stock of the Company or an Affiliate, each ISO shall terminate not more than ten years from the date of the grant or at such earlier time as the Option Agreement may provide; or

B. More than ten percent (10%) of the total combined voting power of all classes of stock of the Company or an Affiliate, each ISO shall terminate not more than five (5) years from the date of the grant or at such earlier time as the Option Agreement may provide.

(iv) Limitation on Yearly Exercise : The Option Agreements shall restrict the amount of ISOs which may become exercisable in any calendar year (under this or any other ISO plan of the Company or an Affiliate) so that the aggregate Fair Market Value (determined on the date each ISO is granted) of the stock with respect to which ISOs are exercisable for the first time by the Participant in any calendar year does not exceed one hundred thousand dollars ($100,000).

7. TERMS AND CONDITIONS OF STOCK GRANTS.

Each Stock Grant to a Participant shall state the principal terms in an Agreement duly executed by the Company and, to the extent required by law or requested by the Company, by the Participant. The Agreement shall be in a form approved by the Administrator and shall contain terms and conditions which the Administrator determines to be appropriate and in the best interest of the Company, subject to the following minimum standards:

(a) Each Agreement shall state the purchase price per share, if any, of the Shares covered by each Stock Grant, which purchase price shall be determined by the Administrator but shall not be less than the minimum consideration required by the Delaware General Corporation Law**,** if any, on the date of the grant of the Stock Grant;

(b) Each Agreement shall state the number of Shares to which the Stock Grant pertains; and

(c) Each Agreement shall include the terms of any right of the Company to restrict or reacquire the Shares subject to the Stock Grant, including the time and events upon which such rights shall accrue and the purchase price therefor, if any.

8. [INTENTIONALLY OMITTED]

9. EXERCISE OF OPTIONS AND ISSUE OF SHARES.

An Option (or any part or installment thereof) shall be exercised by giving written notice to the Company or its designee (in a form acceptable to the Administrator, which may include electronic notice), together with provision for payment of the aggregate exercise price in accordance with this Paragraph for the Shares as to which the Option is being exercised, and upon compliance with any other condition(s) set forth in the Option Agreement. Such notice shall be signed by the person exercising the Option (which signature may be provided electronically in a form acceptable to the Administrator), shall state the number of Shares with respect to which the Option is being exercised and shall contain any representation required by the Plan or the Option Agreement. Payment of the exercise price for the Shares as to which such Option is being exercised shall be made (a) in United States dollars in cash or by check, or (b) at the discretion of the Administrator, through delivery of shares of Common Stock held for at least six months (if required to avoid negative accounting treatment) having a Fair Market Value equal as of the date of the exercise to the aggregate cash exercise price for the number of Shares as to which the Option is being exercised, or (c) at the discretion of the Administrator, by having the Company retain from the Shares otherwise issuable upon exercise of the Option, a number of Shares having a Fair Market Value equal as of the date of exercise to the aggregate exercise price for the number of Shares as to which the Option is being exercised, or (d) at the discretion of the Administrator (after consideration of applicable securities, tax and accounting implications), by delivery of the grantee's personal recourse note bearing interest payable not less than annually at no less than one hundred percent (100%) of the applicable Federal rate, as defined in Section 1274(d) of the Code, or (e) at the discretion of the Administrator, in accordance with a cashless exercise program established with a securities brokerage firm, and approved by the Administrator, or (f) at the discretion of the Administrator, by any combination of (a), (b), (c),

(d) and (e) above or (g) at the discretion of the Administrator, by payment of such other lawful consideration as the Administrator may determine. Notwithstanding the foregoing, the Administrator shall accept only such payment on exercise of an ISO as is permitted by Section 422 of the Code.

The Company shall then reasonably promptly deliver the Shares as to which such Option was exercised to the Participant (or to the Participant's Survivors, as the case may be). In determining what constitutes "reasonably promptly," it is expressly understood that the issuance and delivery of the Shares may be delayed by the Company in order to comply with any law or regulation (including, without limitation, state securities or "blue sky" laws) which requires the Company to take any action with respect to the Shares prior to their issuance. The Shares shall, upon delivery, be fully paid, non-assessable Shares.

10. PAYMENT IN CONNECTION WITH THE ISSUANCE OF STOCK GRANTS AND STOCK-BASED AWARD AND ISSUE OF SHARES.

Any Stock Grant or Stock-Based Award requiring payment of a purchase price for the Shares as to which such Stock Grant or Stock-Based Award is being granted shall be made (a) in United States dollars in cash or by check, or (b) at the discretion of the Administrator, through delivery of shares of Common Stock held for at least six months (if required to avoid negative accounting treatment) and having a Fair Market Value equal as of the date of payment to the purchase price of the Stock Grant or Stock-Based Award, or (c) at the discretion of the Administrator (after consideration of applicable securities, tax and accounting implications), by delivery of the grantee's personal recourse note bearing interest payable not less than annually at no less than one hundred percent (100%) of the applicable Federal rate, as defined in Section 1274(d) of the Code, or (d) at the discretion of the Administrator, by any combination of (a), (b) and (c) above; or (e) at the discretion of the Administrator, by payment of such other lawful consideration as the Administrator may determine.

The Company shall, when required by the applicable Agreement, reasonably promptly deliver the Shares as to which such Stock Grant or Stock-Based Award was made to the Participant (or to the Participant's Survivors, as the case may be), subject to any escrow provision set forth in the applicable Agreement. In determining what constitutes "reasonably promptly," it is expressly understood that the issuance and delivery of the Shares may be delayed by the Company in order to comply with any law or regulation (including, without limitation, state securities or "blue sky" laws) which requires the Company to take any action with respect to the Shares prior to their issuance.

11. RIGHTS AS A SHAREHOLDER.

No Participant to whom a Stock Right has been granted shall have rights as a shareholder with respect to any Shares covered by such Stock Right except after due exercise of an Option or issuance of Shares as set forth in any Agreement, tender of the aggregate exercise or purchase price, if any, for the Shares being purchased and registration of the Shares in the Company's share register in the name of the Participant.

12. ASSIGNABILITY AND TRANSFERABILITY OF STOCK RIGHTS.

By its terms, a Stock Right granted to a Participant shall not be transferable by the Participant other than (i) by will or by the laws of descent and distribution, or (ii) as approved by the Administrator in its discretion and set forth in the applicable Agreement provided that no Stock Right may be transferred by a Participant for value. Notwithstanding the foregoing, an ISO transferred except in compliance with clause (i) above shall no longer qualify as an ISO. The designation of a beneficiary of a Stock Right by a Participant, with the prior approval of the Administrator and in such form as the Administrator shall prescribe, shall not be deemed a transfer prohibited by this Paragraph. Except as provided above during the Participant's lifetime a Stock Right shall only be exercisable by or issued to such Participant (or his or her legal representative) and shall not be assigned, pledged or hypothecated in any way (whether by operation of law or otherwise) and shall not be subject to execution, attachment or similar process. Any attempted transfer, assignment, pledge, hypothecation or other disposition of any Stock Right or of any rights granted thereunder contrary to the provisions of this Plan, or the levy of any attachment or similar process upon a Stock Right, shall be null and void.

13. EFFECT ON OPTIONS OF TERMINATION OF SERVICE OTHER THAN FOR CAUSE OR DEATH OR DISABILITY.

Except as otherwise provided in a Participant's Option Agreement, in the event of a termination of service (whether as an Employee, director or Consultant) with the Company or an Affiliate before the Participant has exercised an Option, the following rules apply:

(a) A Participant who ceases to be an Employee, director or Consultant of the Company or of an Affiliate (for any reason other than termination for Cause, Disability, or death for which events there are special rules in Paragraphs 14, 15, and 16, respectively), may exercise any Option granted to him or her to the extent that the Option is exercisable on the date of such termination of service, but only within such term as the Administrator has designated in a Participant's Option Agreement.

(b) Except as provided in Subparagraph (c) below, or Paragraph 15 or 16, in no event may an Option intended to be an ISO be exercised later than three months after the Participant's termination of employment.

(c) The provisions of this Paragraph, and not the provisions of Paragraph 15 or 16, shall apply to a Participant who subsequently becomes Disabled or dies after the termination of employment, director status or consultancy; provided, however, in the case of a Participant's Disability or death within three months after the termination of employment, director status or consultancy, the Participant or the Participant's Survivors may exercise the Option within one year after the date of the Participant's termination of service, but in no event after the date of expiration of the term of the Option.

(d) Notwithstanding anything herein to the contrary, if subsequent to a Participant's termination of employment, termination of director status or termination of consultancy, but prior to the exercise of an Option, the Administrator or the Board of Directors determines that, either prior or subsequent to the Participant's termination, the Participant engaged in conduct which would constitute Cause, then such Participant shall forthwith cease to have any right to exercise any Option.

(e) A Participant to whom an Option has been granted under the Plan who is absent from the Company or an Affiliate because of temporary disability (any disability other than a Disability as defined in Paragraph 1 hereof), or who is on leave of absence for any purpose, shall not, during the period of any such absence, be deemed, by virtue of such absence alone, to have terminated such Participant's employment, director status or consultancy with the Company or with an Affiliate, except as the Administrator may otherwise expressly provide; provided, however, that, for ISOs, any leave of absence granted by the Administrator of greater than ninety days, unless pursuant to a contract or statute that guarantees the right to reemployment, shall cause such ISO to become a Non-Qualified Option on the 181st day following such leave of absence.

(f) Except as required by law or as set forth in a Participant's Option Agreement, Options granted under the Plan shall not be affected by any change of a Participant's status within or among the Company and any Affiliates, so long as the Participant continues to be an Employee, director or Consultant of the Company or any Affiliate.

14. EFFECT ON OPTIONS OF TERMINATION OF SERVICE FOR CAUSE.

Except as otherwise provided in a Participant's Option Agreement, the following rules apply if the Participant's service (whether as an Employee, director or Consultant) with the Company or an Affiliate is terminated for Cause prior to the time that all of his or her outstanding Options have been exercised:

(a) All outstanding and unexercised Options as of the time the Participant is notified his or her service is terminated for Cause will immediately be terminated.

(b) Cause is not limited to events which have occurred prior to a Participant's termination of service, nor is it necessary that the Administrator's finding of Cause occur prior to termination. If the Administrator determines, subsequent to a Participant's termination of service but prior to the exercise of an Option, that either prior or subsequent to the Participant's termination the Participant engaged in conduct which would constitute Cause, then the right to exercise any Option is terminated.

15. EFFECT ON OPTIONS OF TERMINATION OF SERVICE FOR DISABILITY.

Except as otherwise provided in a Participant's Option Agreement,

(a) A Participant who ceases to be an Employee, director or Consultant of the Company or of an Affiliate by reason of Disability may exercise any Option granted to such Participant:

(i) To the extent that the Option has become exercisable but has not been exercised on the date of the Participant's termination of service due to Disability; and

(ii) In the event rights to exercise the Option accrue periodically, to the extent of a pro rata portion through the date of the Participant's termination of service due to Disability of any additional vesting rights that would have accrued on the next vesting date had the Participant not become Disabled. The proration shall be based upon the number of days accrued in the current vesting period prior to the date of the Participant's termination of service due to Disability.

(b) A Disabled Participant may exercise the Option only within the period ending one year after the date of the Participant's termination of service due to Disability, notwithstanding that the Participant might have been able to exercise the Option as to some or all of the Shares on a later date if the Participant had not been terminated due to Disability and had continued to be an Employee, director or Consultant or, if earlier, within the originally prescribed term of the Option.

(c) The Administrator shall make the determination both of whether Disability has occurred and the date of its occurrence (unless a procedure for such determination is set forth in another agreement between the Company and such Participant, in which case such procedure shall be used for such determination). If requested, the Participant shall be examined by a physician selected or approved by the Administrator, the cost of which examination shall be paid for by the Company.

16. EFFECT ON OPTIONS OF DEATH WHILE AN EMPLOYEE, DIRECTOR OR CONSULTANT.

Except as otherwise provided in a Participant's Option Agreement,

(a) In the event of the death of a Participant while the Participant is an Employee, director or Consultant of the Company or of an Affiliate, such Option may be exercised by the Participant's Survivors:

(i) To the extent that the Option has become exercisable but has not been exercised on the date of death; and

(ii) In the event rights to exercise the Option accrue periodically, to the extent of a pro rata portion through the date of death of any additional vesting rights that would have accrued on the next vesting date had the Participant not died. The proration shall be based upon the number of days accrued in the current vesting period prior to the Participant's date of death.

(b) If the Participant's Survivors wish to exercise the Option, they must take all necessary steps to exercise the Option within one year after the date of death of such Participant, notwithstanding that the decedent might have been able to exercise the Option as to some or all of the Shares on a later date if he or she had not died and had continued to be an Employee, director or Consultant or, if earlier, within the originally prescribed term of the Option.

17. EFFECT OF TERMINATION OF SERVICE ON UNACCEPTED STOCK GRANTS AND STOCK-BASED AWARDS.

In the event of a termination of service (whether as an Employee, director or Consultant) with the Company or an Affiliate for any reason before the Participant has accepted a Stock Grant or a Stock-Based Award and paid the purchase price, if required at the time, such grant shall terminate.

For purposes of this Paragraph 17 and Paragraph 18 below, a Participant to whom a Stock Grant or a Stock-Based Award has been issued under the Plan who is absent from work with the Company or with an Affiliate because of temporary disability (any disability other than a Disability as defined in Paragraph 1 hereof), or who is on leave of absence for any purpose, shall not, during the period of any such absence, be deemed, by virtue of such absence alone, to have terminated such Participant's employment, director status or consultancy with the Company or with an Affiliate, except as the Administrator may otherwise expressly provide.

In addition, for purposes of this Paragraph 17 and Paragraph 18 below, any change of employment or other service within or among the Company and any Affiliates shall not be treated as a termination of employment, director status or consultancy so long as the Participant continues to be an Employee, director or Consultant of the Company or any Affiliate.

18. EFFECT ON STOCK GRANTS AND STOCK-BASED AWARDS OF TERMINATION OF SERVICE OTHER THAN FOR CAUSE OR DEATH OR DISABILITY.

Except as otherwise provided in a Participant's Stock Grant Agreement, in the event of a termination of service (whether as an Employee, director or Consultant), other than termination for Cause, Disability, or death for which events there are special rules in Paragraphs 19, 20, and 21, respectively, before all forfeiture provisions or Company rights of repurchase (other than rights to repurchase at then fair market value following termination of service as an Employee, director or Consultant) shall have lapsed, then the Company shall have the right to cancel or repurchase that number of Shares subject to a Stock Grant as to which the Company's forfeiture or repurchase rights have not lapsed.

19. EFFECT ON STOCK GRANTS AND STOCK-BASED AWARDS OF TERMINATION OF SERVICE FOR CAUSE.

Except as otherwise provided in a Participant's Stock Grant Agreement, the following rules apply if the Participant's service (whether as an Employee, director or Consultant) with the Company or an Affiliate is terminated for Cause:

(a) All Shares subject to any Stock Grant that remain subject to forfeiture provisions or as to which the Company shall have a repurchase right shall be immediately forfeited to the Company as of the time the Participant is notified his or her service is terminated for Cause.

(b) Cause is not limited to events which have occurred prior to a Participant's termination of service, nor is it necessary that the Administrator's finding of Cause occur prior to termination. If the Administrator determines, subsequent to a Participant's termination of

service, that either prior or subsequent to the Participant's termination the Participant engaged in conduct which would constitute Cause, then all Shares subject to any Stock Grant that remained subject to forfeiture provisions or as to which the Company had a repurchase right on the date of termination shall be immediately forfeited to the Company.

20. EFFECT ON STOCK GRANTS AND STOCK-BASED AWARDS OF TERMINATION OF SERVICE FOR DISABILITY.

Except as otherwise provided in a Participant's Stock Grant Agreement, the following rules apply if a Participant ceases to be an Employee, director or Consultant of the Company or of an Affiliate by reason of Disability: to the extent the forfeiture provisions or the Company's rights of repurchase have not lapsed on the date of Disability, they shall be exercisable; provided, however, that in the event such forfeiture provisions or rights of repurchase lapse periodically, such provisions or rights shall lapse to the extent of a pro rata portion of the Shares subject to such Stock Grant through the date of Disability as would have lapsed had the Participant not become Disabled. The proration shall be based upon the number of days accrued prior to the date of Disability.

The Administrator shall make the determination both as to whether Disability has occurred and the date of its occurrence (unless a procedure for such determination is set forth in another agreement between the Company and such Participant, in which case such procedure shall be used for such determination). If requested, the Participant shall be examined by a physician selected or approved by the Administrator, the cost of which examination shall be paid for by the Company.

21. EFFECT ON STOCK GRANTS OF DEATH WHILE AN EMPLOYEE, DIRECTOR OR CONSULTANT.

Except as otherwise provided in a Participant's Stock Grant Agreement, the following rules apply in the event of the death of a Participant while the Participant is an Employee, director or Consultant of the Company or of an Affiliate: to the extent the forfeiture provisions or the Company's rights of repurchase have not lapsed on the date of death, they shall be exercisable; provided, however, that in the event such forfeiture provisions or rights of repurchase lapse periodically, such provisions or rights shall lapse to the extent of a pro rata portion of the Shares subject to such Stock Grant through the date of death as would have lapsed had the Participant not died. The proration shall be based upon the number of days accrued prior to the Participant's date of death.

22. PURCHASE FOR INVESTMENT.

Unless the offering and sale of the Shares shall have been effectively registered under the Securities Act, the Company shall be under no obligation to issue Shares under the Plan unless and until the following conditions have been fulfilled:

(a) The person who receives a Stock Right shall warrant to the Company, prior to the receipt of Shares, that such person is acquiring such Shares for his or her own account, for investment, and not with a view to, or for sale in connection with, the distribution of any such Shares, in which event the person acquiring such Shares shall be bound by the provisions of the following legend (or a legend in substantially similar form) which shall be endorsed upon the certificate evidencing the Shares issued pursuant to such exercise or such grant:

> "The shares represented by this certificate have been taken for investment and they may not be sold or otherwise transferred by any person, including a pledgee, unless (1) either (a) a Registration Statement with respect to such shares shall be effective under the Securities Act of 1933, as amended, or (b) the Company shall have received an opinion of counsel satisfactory to it that an exemption from registration under such Act is then available, and (2) there shall have been compliance with all applicable state securities laws."

(b) At the discretion of the Administrator, the Company shall have received an opinion of its counsel that the Shares may be issued in compliance with the Securities Act without registration thereunder.

23. DISSOLUTION OR LIQUIDATION OF THE COMPANY.

Upon the dissolution or liquidation of the Company, all Options granted under this Plan which as of such date shall not have been exercised and all Stock Grants and Stock-Based Awards which have not been accepted, to the extent required under the applicable Agreement, will terminate and become null and void; provided, however, that if the rights of a Participant or a Participant's Survivors have not otherwise terminated and expired, the Participant or the Participant's Survivors will have the right immediately prior to such dissolution or liquidation to exercise or accept any Stock Right to the extent that the Stock Right is exercisable or subject to acceptance as of the date immediately prior to such dissolution or liquidation. Upon the dissolution or liquidation of the Company, any outstanding Stock-Based Awards shall immediately terminate unless otherwise determined by the Administrator or specifically provided in the applicable Agreement.

24. ADJUSTMENTS.

Upon the occurrence of any of the following events, a Participant's rights with respect to any Stock Right granted to him or her hereunder shall be adjusted as hereinafter provided, unless otherwise specifically provided in a Participant's Agreement:

(a) Stock Dividends and Stock Splits. If (i) the shares of Common Stock shall be subdivided or combined into a greater or smaller number of shares or if the Company shall issue any shares of Common Stock as a stock dividend on its outstanding Common Stock, or

(ii) additional shares or new or different shares or other securities of the Company or other non-cash assets are distributed with respect to such shares of Common Stock, each Stock Right and the number of shares of Common Stock deliverable thereunder shall be appropriately increased or decreased proportionately, and appropriate adjustments shall be made including, in the exercise or purchase price per share, to reflect such events. The number of Shares subject to the limitations in Paragraphs 3(a) and 4(c) shall also be proportionately adjusted upon the occurrence of such events.

(b) Corporate Transactions. If the Company is to be consolidated with or acquired by another entity in a merger, consolidation, sale of all or substantially all of the Company's assets or the acquisition of all of the outstanding voting stock of the Company in a single transaction or a series of related transactions other than a transaction to merely change the state of incorporation (a "Corporate Transaction"), the Administrator or the board of directors of any entity assuming the obligations of the Company hereunder (the "Successor Board"), shall, as to outstanding Options, either (i) make appropriate provision for the continuation of such Options by substituting on an equitable basis for the Shares then subject to such Options either the consideration payable with respect to the outstanding shares of Common Stock in connection with the Corporate Transaction or securities of any successor or acquiring entity; or (ii) upon written notice to the Participants, provide that such Options must be exercised (either (A) to the extent then exercisable or, (B) at the discretion of the Administrator, any such Options being made partially or fully exercisable for purposes of this Subparagraph), within a specified number of days of the date of such notice, at the end of which period such Options which have not been exercised shall terminate; or (iii) terminate such Options in exchange for payment of an amount equal to the consideration payable upon consummation of such Corporate Transaction to a holder of the number of shares of Common Stock into which such Option would have been exercisable (either (A) to the extent then exercisable or, (B) at the discretion of the Administrator, any such Options being made partially or fully exercisable for purposes of this Subparagraph) less the aggregate exercise price thereof. For purposes of determining the payments to be made pursuant to Subclause (iii) above, in the case of a Corporate Transaction the consideration for which, in whole or in part, is other than cash, the consideration other than cash shall be valued at the fair value thereof as determined in good faith by the Board of Directors.

With respect to outstanding Stock Grants, the Administrator or the Successor Board, shall make appropriate provision for the continuation of such Stock Grants on the same terms and conditions by substituting on an equitable basis for the Shares then subject to such Stock Grants either the consideration payable with respect to the outstanding Shares of Common Stock in connection with the Corporate Transaction or securities of any successor or acquiring entity. In lieu of the foregoing, in connection with any Corporate Transaction, the Administrator may provide that, upon consummation of the Corporate Transaction, each outstanding Stock Grant shall be terminated in exchange for payment of an amount equal to the consideration payable upon consummation of such Corporate Transaction to a holder of the number of shares of Common Stock comprising such Stock Grant (to the extent such Stock Grant is no longer subject to any forfeiture or repurchase rights then in effect or, at the discretion of the Administrator, all forfeiture and repurchase rights being waived upon such Corporate Transaction). For purposes of determining such payments, in the case of a Corporate Transaction the consideration for which, in whole or in part, is other than cash, the consideration other than cash shall be valued at the fair value thereof as determined in good faith by the Board of Directors.

In taking any of the actions permitted under this Paragraph 24(b), the Administrator shall not be obligated by the Plan to treat all Stock Rights, all Stock Rights held by a Participant, or all Stock Rights of the same type, identically.

(c) Recapitalization or Reorganization. In the event of a recapitalization or reorganization of the Company other than a Corporate Transaction pursuant to which securities of the Company or of another corporation, limited liability company or other entity are issued with respect to the outstanding shares of Common Stock, a Participant upon exercising an Option or accepting a Stock Grant after the recapitalization or reorganization shall be entitled to receive for the price paid upon such exercise or acceptance if any, the number of replacement securities which would have been received if such Option had been exercised or Stock Grant accepted prior to such recapitalization or reorganization.

(d) Adjustments to Stock-Based Awards. Upon the happening of any of the events described in Subparagraphs (a), (b) or (c) above, any outstanding Stock-Based Award shall be appropriately adjusted to reflect the events described in such Subparagraphs. The Administrator or the Successor board shall determine the specific adjustments to be made under Paragraph 24, including, but not limited to, the effect of any Corporate Transaction and, subject to Paragraph 4, its determination shall be conclusive.

(e) Modification of Options. Notwithstanding the foregoing, any adjustments made pursuant to Subparagraph (a), (b) or (c) above with respect to Options shall be made only after the Administrator determines whether such adjustments would (i) constitute a "modification" of any ISOs (as that term is defined in Section 424(h) of the Code) or (ii) cause any adverse tax consequences for the holders of Options, including, but not limited to, pursuant to Section 409A of the Code. If the Administrator determines that such adjustments made with respect to Options would constitute a modification or other adverse tax consequence, it may in its discretion refrain from making such adjustments, unless the holder of an Option specifically agrees in writing that such adjustment be made and such writing indicates that the holder has full knowledge of the consequences of such "modification" on his or her income tax treatment with respect to the Option. This paragraph shall not apply to the acceleration of the vesting of any ISO that would cause any portion of the ISO to violate the annual vesting limitation contained in Section 422(d) of the Code, as described in Paragraph 6(b)(iv).

25. ISSUANCES OF SECURITIES.

Except as expressly provided herein, no issuance by the Company of shares of stock of any class, or securities convertible into shares of stock of any class, shall affect, and no adjustment by reason thereof shall be made with respect to, the number or price of shares subject to Stock Rights. Except as expressly provided herein, no adjustments shall be made for dividends paid in cash or in property (including without limitation, securities) of the Company prior to any issuance of Shares pursuant to a Stock Right.

26. FRACTIONAL SHARES.

No fractional shares shall be issued under the Plan and the person exercising a Stock Right shall receive from the Company cash in lieu of such fractional shares equal to the Fair Market Value thereof.

27. CONVERSION OF ISOs INTO NON-QUALIFIED OPTIONS; TERMINATION OF ISOs.

The Administrator, at the written request of any Participant, may in its discretion take such actions as may be necessary to convert such Participant's ISOs (or any portions thereof) that have not been exercised on the date of conversion into Non-Qualified Options at any time prior to the expiration of such ISOs, regardless of whether the Participant is an Employee of the Company or an Affiliate at the time of such conversion. At the time of such conversion, the Administrator (with the consent of the Participant) may impose such conditions on the exercise of the resulting Non-Qualified Options as the Administrator in its discretion may determine, provided that such conditions shall not be inconsistent with this Plan. Nothing in the Plan shall be deemed to give any Participant the right to have such Participant's ISOs converted into Non-Qualified Options, and no such conversion shall occur until and unless the Administrator takes appropriate action. The Administrator, with the consent of the Participant, may also terminate any portion of any ISO that has not been exercised at the time of such conversion.

28. WITHHOLDING.

In the event that any federal, state, or local income taxes, employment taxes, Federal Insurance Contributions Act ("F.I.C.A.") withholdings or other amounts are required by applicable law or governmental regulation to be withheld from the Participant's salary, wages or other remuneration in connection with the issuance of a Stock Right or Shares under the Plan or upon the lapsing of any forfeiture provision or right of repurchase or for any other reason required by law, the Company may withhold from the Participant's compensation, if any, or may require that the Participant advance in cash to the Company, or to any Affiliate of the Company which employs or employed the Participant, the statutory minimum amount of such withholdings unless a different withholding arrangement, including the use of shares of the Company's Common Stock or a promissory note, is authorized by the Administrator (and permitted by law). For purposes hereof, the fair market value of the shares withheld for purposes of payroll withholding shall be determined in the manner set forth under the definition of Fair Market Value provided in Paragraph 1 above, as of the most recent practicable date prior to the date of exercise. If the Fair Market Value of the shares withheld is less than the amount of payroll withholdings required, the Participant may be required to advance the difference in cash to the Company or the Affiliate employer. The Administrator in its discretion may condition the exercise of an Option for less than the then Fair Market Value on the Participant's payment of such additional withholding.

29. NOTICE TO COMPANY OF DISQUALIFYING DISPOSITION.

Each Employee who receives an ISO shall notify the Company in writing immediately after the Employee makes a Disqualifying Disposition of any Shares acquired pursuant to the exercise of an ISO. A Disqualifying Disposition is defined in Section 424(c) of the Code and includes any disposition (including any sale or gift) of such Shares before the later of (a) two years after the date the Employee was granted the ISO, or (b) one year after the date the Employee acquired Shares by exercising the ISO, except as otherwise provided in Section 424(c) of the Code. If the Employee has died before such Shares are sold, these holding period requirements do not apply and no Disqualifying Disposition can occur thereafter.

30. TERMINATION OF THE PLAN.

The Plan will terminate on May 15, 2027, the date which is ten years from the earlier of the date of its adoption by the Board of Directors and the date of its approval by the shareholders of the Company. The Plan may be terminated at an earlier date by vote of the shareholders or the Board of Directors of the Company; provided, however, that any such earlier termination shall not affect any Agreements executed prior to the effective date of such termination. Termination of the Plan shall not affect any Stock Rights theretofore granted.

31. AMENDMENT OF THE PLAN AND AGREEMENTS.

The Plan may be amended by the shareholders of the Company. The Plan may also be amended by the Administrator, including, without limitation, to the extent necessary to qualify any or all outstanding Stock Rights granted under the Plan or Stock Rights to be granted under the Plan for favorable federal income tax treatment as may be afforded incentive stock options under Section 422 of the Code (including deferral of taxation upon exercise), and to the extent necessary to qualify the Shares issuable under the Plan for listing on any national securities exchange or quotation in any national automated quotation system of securities dealers. Any amendment approved by the Administrator which the Administrator determines is of a scope that requires shareholder approval shall be subject to obtaining such shareholder approval. Any modification or amendment of the Plan shall not, without the consent of a Participant, adversely affect his or her rights under a Stock Right previously granted to him or her. With the consent of the Participant affected, the Administrator may amend outstanding Agreements in a manner which may be adverse to the Participant but which is not inconsistent with the Plan. In the discretion of the Administrator, outstanding Agreements may be amended by the Administrator in a manner which is not adverse to the Participant.

32. EMPLOYMENT OR OTHER RELATIONSHIP.

Nothing in this Plan or any Agreement shall be deemed to prevent the Company or an Affiliate from terminating the employment, consultancy or director status of a Participant, nor to prevent a Participant from terminating his or her own employment, consultancy or director status or to give any Participant a right to be retained in employment or other service by the Company or any Affiliate for any period of time.

33. GOVERNING LAW.

This Plan shall be construed and enforced in accordance with the law of the State of Delaware.

7

Exhibit 10.6

SYNLOGIC, INC.

AMENDED & RESTATED NON-EMPLOYEE DIRECTOR COMPENSATION PROGRAM

Non-employee members of the board of directors (the "***Board***") of Synlogic, Inc. (formerly known as Mirna Therapeutics, Inc.) (the "***Company***") shall be eligible to receive cash and equity compensation as set forth in this Amended & Restated Non-Employee Director Compensation Program (this "***Program***"), which is being adopted pursuant to the Board's resolutions on December 13, 2017. The cash and equity compensation described in this Program shall be paid or be made, as applicable, automatically and without further action of the Board, to each member of the Board who is not an employee of the Company or any parent or subsidiary of the Company (each, a "***Non-Employee Director***") who may be eligible to receive such cash or equity compensation, unless such Non-Employee Director declines the receipt of such cash or equity compensation by written notice to the Company. This Program shall remain in effect until it is revised or rescinded by further action of the Board. This Program may be amended, modified or terminated by the Board at any time, without advance notice, in its sole discretion. The terms and conditions of this Program shall supersede any prior cash and/or equity compensation arrangements for service as a member of the Board between the Company and any of its Non-Employee Directors. This Program shall become effective on December 13, 2017 (the "***Effective Date***").

1. Cash Compensation.

(a) Annual Retainers. Each Non-Employee Director shall be eligible to receive an annual retainer of $35,000 for service on the Board.

(b) Additional Annual Retainers. In addition, a Non-Employee Director shall receive the following annual retainers:

(i) Chairman of the Board. A Non-Employee Director serving as Chairman of the Board shall receive an additional annual retainer of $30,000 for such service.

(ii) Audit Committee. A Non-Employee Director serving as Chairperson of the Audit Committee shall receive an additional annual retainer of $15,000 for such service. A Non-Employee Director serving as a member of the Audit Committee (other than the Chairperson) shall receive an additional annual retainer of $7,500 for such service.

(iii) Compensation Committee. A Non-Employee Director serving as Chairperson of the Compensation Committee shall receive an additional annual retainer of $10,000 for such service. A Non-Employee Director serving as a member of the Compensation Committee (other than the Chairperson) shall receive an additional annual retainer of $5,000 for such service.

(iv) Nominating and Corporate Governance Committee. A Non-Employee Director serving as Chairperson of the Nominating and Corporate Governance Committee shall receive an additional annual retainer of $7,500 for such service. A Non-Employee Director serving as a member of the Nominating and Corporate Governance Committee (other than the Chairperson) shall receive an additional annual retainer of $3,750 for such service.

(c) Payment of Retainers. The annual retainers described in Sections 1(a) and 1(b) shall be earned on a quarterly basis based on a calendar quarter and shall be paid by the Company in arrears not later than the fifteenth day following the end of each calendar quarter. In the event a Non-Employee Director does not serve as a Non-Employee Director, or in the applicable positions described in Section 1(b), for an entire calendar quarter, the retainer paid to such Non-Employee Director shall be prorated for the portion of such calendar quarter actually served as a Non-Employee Director, or in such position, as applicable.

2. Equity Compensation. Non-Employee Directors shall be granted the equity awards described below. The awards described below shall be granted under and shall be subject to the terms and provisions of the Company's 2015 Equity Incentive Award Plan or any other applicable Company equity incentive plan then-maintained by the Company (the "***Equity Plan***") and shall be evidenced by the execution and delivery of award agreements, including attached exhibits, in substantially the forms previously approved by the Board. All applicable terms of the Equity Plan apply to this Program as if fully set forth herein, and all grants of stock options hereby are subject in all respects to the terms of the Equity Plan.

(a) Initial Awards. Each Non-Employee Director who is initially elected or appointed to the Board after the Effective Date shall automatically be granted, on the date of such initial election or appointment, an option to purchase 20,000 shares of the Company's common stock. The awards described in this Section 2(a) shall be referred to as "***Initial Awards***." No Non-Employee Director shall be granted more than one Initial Award.

(b) Subsequent Awards. A Non-Employee Director who (i) has been serving on the Board immediately prior to any annual meeting of the Company's stockholders after the Effective Date and (ii) will continue to serve as a Non-Employee Director immediately following such meeting, shall be automatically granted, on the date of such annual meeting, an option to purchase 10,000 shares of the Company's common stock. The awards described in this Section 2(b) shall be referred to as "***Subsequent Awards***." For the avoidance of doubt, a Non-Employee Director elected for the first time to the Board at an annual meeting of the Company's stockholders shall only receive an Initial Award in connection with such election, and shall not receive any Subsequent Award on the date of such meeting as well.

(c) Termination of Service of Employee Directors. Members of the Board who are employees of the Company or any parent or subsidiary of the Company who subsequently terminate their service with the Company and any parent or subsidiary of the Company and remain on the Board will not receive an Initial Award pursuant to Section 2(a) above, but to the extent that they are otherwise eligible, will be eligible to receive, after termination from service with the Company and any parent or subsidiary of the Company, Subsequent Awards as described in Section 2(b) above.

(d) Terms of Awards Granted to Non-Employee Directors

(i) Purchase Price. The per share exercise price of each option granted to a Non-Employee Director shall equal the Fair Market Value (as defined in the Equity Plan) of a share of common stock on the date the option is granted. Without limiting the foregoing, Fair Market Value as of the Effective Date shall be equal to the price per share to the public in the Company's initial public offering, as set forth on the cover of the final prospectus of the initial public offering of Company common stock.

(ii) Vesting. Each Initial Award shall vest and become exercisable in substantially equal installments on each of the first three anniversaries of the date of grant, subject to the Non-Employee Director continuing to provide services to the Company through each such vesting date. Each Subsequent Award shall vest and become exercisable in full on the earlier of (A) the first anniversary of the date of grant or (B) immediately prior to the next annual meeting of the Company's stockholders after the date of grant, subject to the Non-Employee Director continuing to provide services to the Company through such vesting date.

(iii) Change in Control Acceleration. All of a Non-Employee Director's Initial Awards and Subsequent Awards, and any other stock options or other equity-based awards outstanding and held by the Non-Employee Director, shall vest and, if applicable, become exercisable with respect to one hundred percent (100%) of the shares subject thereto immediately prior to the occurrence of a Change in Control (as defined in the Equity Plan), to the extent outstanding at such time.

(iv) Term. The term of each stock option granted to a Non-Employee Director shall be ten (10) years from the date the option is granted.

3. Reimbursements. The Company shall reimburse each Non-Employee Director for all reasonable, documented, out-of-pocket travel and other business expenses incurred by such Non-Employee Director in the performance of his or her duties to the Company in accordance with the Company's applicable expense reimbursement policies and procedures as in effect from time to time.

* * * * *

Exhibit 10.24

LEASE

by and between

BMR-ROGERS STREET LLC,
a Delaware limited liability company

and

SYNLOGIC, INC.
a Delaware corporation

Table of Contents

LEASE

THIS LEASE (this "Lease") is entered into as of this ____ day of [_____], 2017 (the "Execution Date"), by and between BMR-ROGERS STREET LLC, a Delaware limited liability company ("Landlord"), and SYNLOGIC, INC., a Delaware corporation ("Tenant").

RECITALS

A. WHEREAS, pursuant to that certain ground lease dated as of March 30, 1999, by and among MBA-Rogers Street, LLC ("Ground Lessor," as successor-in-interest to O&T Realty, LLC, and MBA-Cambridge, LLC (collectively, "Initial Ground Lessor")), as landlord, and Rogers Street, LLC, a Delaware limited liability company ("Initial Ground Lessee"), as tenant; as such ground lease has been amended by that certain letter agreement dated as of July 29, 1999, between Initial Ground Lessor and Initial Ground Lessee, and that certain Agreement Regarding Arbitration and Lease Amendments dated as of December 15, 1999, by and between Initial Ground Lessor and Initial Ground Lessee; and as such ground lease has been assigned pursuant to that certain Assignment and Assumption of Ground Lease dated as of April 4, 2007, by and between Initial Ground Lessee and Landlord (such ground lease, as so amended and assigned, and as the same may be further amended, amended and restated, supplemented or otherwise modified from time to time, the "Ground Lease"), Landlord leases certain real property described on Exhibit A-1 attached hereto (the "Property") and the improvements located thereon, including, in part, the building at 301 Binney Street (the "Building"); and

B. WHEREAS, Landlord wishes to lease to Tenant, and Tenant desires to lease from Landlord, certain premises (the "Premises") located primarily on the fourth (4th) floor of the Building, pursuant to the terms and conditions of this Lease, as detailed below.

AGREEMENT

NOW, THEREFORE, Landlord and Tenant, in consideration of the mutual promises contained herein and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and intending to be legally bound, agree as follows:

1. Lease of Premises.

1.1. Effective on the Term Commencement Date (as defined below), Landlord hereby leases to Tenant, and Tenant hereby leases from Landlord, the Premises, as shown on Exhibit A attached hereto, including exclusive shafts, cable runs, mechanical spaces and rooftop areas, for use by Tenant in accordance with the Permitted Use (as defined below) and no other uses. The Property and all landscaping, parking facilities, private drives and other improvements and appurtenances related thereto, including the Building and other buildings located on the Property, are hereinafter collectively referred to as the "Project." All portions of the Building that are for the non-exclusive use of the tenants of the Building only, and not the tenants of the Project generally, such as service corridors, stairways, elevators, public restrooms and public lobbies (all to the extent located in the Building), are hereinafter referred to as "Building Common Area." All portions of the Project that are for the non-exclusive use of tenants of the Project generally, including driveways, sidewalks, parking areas and landscaped areas, are hereinafter referred to as "Project Common Area." The Building Common Area and Project Common Area are collectively referred to herein as "Common Area."

2. Basic Lease Provisions. For convenience of the parties, certain basic provisions of this Lease are set forth herein. The provisions set forth herein are subject to the remaining terms and conditions of this Lease and are to be interpreted in light of such remaining terms and conditions.

2.1. This Lease shall take effect upon the Execution Date and, except as specifically otherwise provided within this Lease, each of the provisions hereof shall be binding upon and inure to the benefit of Landlord and Tenant from the date of execution and delivery hereof by all parties hereto.

2.2. In the definitions below, each current Rentable Area (as defined below) is expressed in rentable square feet. Rentable Area and "Tenant's Pro Rata Share" are subject to adjustment as provided in this Lease.

Definition or Provision	**Means the Following (As of the Execution Date)**
Approximate Rentable Area of Premises*	41,346 square feet
Approximate Rentable Area of Building	417,290 square feet
Tenant's Pro Rata Share of Building*	9.91%

** Note: Subject to adjustment based upon the Rentable Area of the Premises as of the Term Commencement Date.*

2.3. Monthly and annual installments of Base Rent for the Premises ("Base Rent") as of the Rent Commencement Date (as defined below), subject to adjustment under this Lease:

Dates	**Square Feet of Rentable Area***	**Base Rent per Square Foot of Rentable Area**	**Monthly Base Rent***	**Annual Base Rent***
Rent Commencement Date- The day immediately prior to the first (1st) annual anniversary of the Rent Commencement Date	41,346	$76.00 annually	$261,858.00	$3,142,296.00

** Note: Subject to adjustment based upon the Rentable Area of the Premises as of the Term Commencement Date.*

2.4. Estimated Term Commencement Date: January 22, 2018.

2.5. Estimated Term Expiration Date: June 30, 2028.

2.6. Security Deposit: $1,047,432, subject to increase in accordance with the terms hereof.

2.7. Permitted Use: General office and laboratory use in conformity with all federal, state, municipal and local laws, codes, ordinances, rules and regulations of Governmental Authorities (as defined below), committees, associations, or other regulatory committees, agencies or governing bodies having jurisdiction over the Premises, the Building, the Property, the Project, Landlord or Tenant, including both statutory and common law and hazardous waste rules and regulations ("Applicable Laws"). Tenant acknowledges and agrees that, notwithstanding anything in this Lease to the contrary, pursuant to Applicable Laws, the portion of the Premises located in the basement of the Building is not permitted to be occupied and may only be used for purposes that are included within the Permitted Use that do not involve occupancy by individual persons (which may include the placement of Tenant's Acid Neutralization Tank).

2.8. Address for Rent Payment:

BMR-Rogers Street LLC
Attention Entity 635
P.O. Box 511415
Los Angeles, California 90051-7970

2.9. Address for Notices to Landlord:

BMR-Rogers Street LLC
17190 Bernardo Center Drive
San Diego, California 92128
Attn: Legal Department

2.10. Address for Notices to Tenant:

Synlogic, Inc.
200 Sidney Street
Cambridge, MA 02139
Attention: [_____]

2.11. Address for Invoices to Tenant:

Synlogic, Inc.
200 Sidney Street
Cambridge, MA 02139
Attention: [_____]

2.12. The following Exhibits are attached hereto and incorporated herein by reference:

Exhibit A	Premises
Exhibit A-1	Property
Exhibit B	Work Letter
Exhibit B, Schedule 1	Preliminary Schedule
Exhibit B, Schedule 2	Schematic Design Plans and Basis of Design
Exhibit B, Schedule 3	Preliminary Budget
Exhibit B-1	Tenant Work Insurance Schedule
Exhibit C	Acknowledgement of Term Commencement Date and Term Expiration Date
Exhibit D	[Intentionally omitted]
Exhibit E	Form of Letter of Credit
Exhibit F	Rules and Regulations
Exhibit G	PTDM
Exhibit H	Tenant's Personal Property
Exhibit I	Form of Estoppel Certificate
Exhibit J	Form of Ground Lease Non-Disturbance and Attornment Agreement

3. Term The actual term of this Lease (as the same may be extended pursuant to Article 42 hereof, and as the same may be earlier terminated in accordance with this Lease, the "Term") shall commence on the actual Term Commencement Date (as defined in Article 4) and end on the date (the "Term Expiration Date") that is one hundred twenty (120) months after the Rent Commencement Date, subject to extension or earlier termination of this Lease as provided herein.

4. Possession and Commencement Date.

4.1. Landlord shall use commercially reasonable efforts to tender possession of the Premises to Tenant on the Estimated Term Commencement Date, with the work (the "Tenant Improvements") required of Landlord described in the Work Letter attached hereto as Exhibit B (the "Work Letter") Substantially Complete (as defined below). Tenant agrees that in the event such work is not Substantially Complete on or before the Estimated Term Commencement Date for any reason, then (a) this Lease shall not be void or voidable, (b) Landlord shall not be liable to Tenant for any loss or damage resulting therefrom, (c) the Term Expiration Date shall be extended accordingly and (d) Tenant shall not be responsible for the payment of any Base Rent or Tenant's Adjusted Share of Operating Expenses (as defined below) until the actual Term Commencement Date as described in Section 4.2 occurs. The term "Substantially Complete" or "Substantial Completion" means that (i) the Tenant Improvements are substantially complete in

accordance with the Approved Plans (as defined in the Work Letter), except for minor punch list items that do not interfere with Tenant's ability to occupy and use the Premises for the Permitted Use and (ii) the Premises has received a certificate of occupancy or a temporary certificate of occupancy or its functional equivalent from the City of Cambridge Inspectional Services Department (or other applicable governmental agency) (except that no such certificate or functional equivalent shall be required for the portion of the Premises located in the basement of the Building). Notwithstanding anything in this Lease (including the Work Letter) to the contrary, Landlord's obligation to timely achieve Substantial Completion shall be subject to extension on a day-for-day basis as a result of Force Majeure (as defined below).

4.2. The "Term Commencement Date" shall be the day Landlord tenders possession of the Premises to Tenant with the Tenant Improvements Substantially Complete. If possession is delayed by action of Tenant, then the Term Commencement Date shall be the date that the Term Commencement Date would have occurred but for such delay. Tenant shall execute and deliver to Landlord written acknowledgment of the actual Term Commencement Date and the Term Expiration Date within ten (10) days after Tenant takes occupancy of the Premises, in the form attached as Exhibit C hereto. Failure to execute and deliver such acknowledgment, however, shall not affect the Term Commencement Date or Landlord's or Tenant's liability hereunder. Failure by Tenant to obtain validation by any medical review board or other similar governmental licensing of the Premises required for the Permitted Use by Tenant shall not serve to extend the Term Commencement Date.

4.3. Landlord shall endeavor to allow Tenant to enter upon the Premises after the date that is thirty (30) days prior to the Term Commencement Date for the purpose of installing trade fixtures, equipment and the placement of personal property; provided that, Tenant shall furnish to Landlord evidence satisfactory to Landlord in advance that insurance coverages required of Tenant under the provisions of Article 23 are in effect, and such entry shall be subject to all the terms and conditions of this Lease (except that Tenant shall have no obligation to pay Base Rent or Operating Expenses hereunder except to the extent of the cost of utilities consumed by and building services provided to Tenant); and provided, further, that to the extent the Term Commencement Date is delayed due to such early access, then the Term Commencement Date shall be the date that the Term Commencement Date would have occurred but for such delay.

4.4. Landlord shall cause the Tenant Improvements to be constructed in the Premises pursuant to the Work Letter at a cost to Landlord not to exceed (a) Six Million Two Hundred One Thousand Nine Hundred Dollars ($6,201,900.00) (based upon One Hundred Fifty Dollars ($150.00) per square foot of Rentable Area (as defined below and subject to change based upon the Rentable Area of the Premises as of the Term Commencement Date)) (the "TI Allowance"). The TI Allowance may be applied to the costs of (m) construction, (n) Landlord's out-of-pocket expenses related to project management of the Tenant Improvements (which fee shall not exceed two percent (2%) of the cost of the Tenant Improvements, including the TI Allowance), (o) commissioning of mechanical, electrical and plumbing systems by a licensed, qualified commissioning agent hired by Landlord, and review of such party's commissioning report by a licensed, qualified commissioning agent hired by Tenant, (p) space planning, architect, engineering and other related services performed by third parties unaffiliated with Tenant, (q) building permits and other taxes, fees, charges and levies by Governmental Authorities (as defined below) for permits or for inspections of the Tenant Improvements, (r) costs and expenses

for labor, material, equipment and fixtures, and (s) submetering and demising costs on the 4th floor. In no event shall the TI Allowance be used for (w) payments to Tenant or any affiliates of Tenant, (x) the purchase of any furniture, personal property or other non-building system equipment, (y) costs arising from any default by Tenant of its obligations under this Lease or (z) costs that are recoverable by Tenant from a third party (e.g., insurers, warrantors, or tortfeasors).

4.5. Tenant shall have until June 1, 2018 (the "TI Deadline"), to expend the unused portion of the TI Allowance, after which date Landlord's obligation to fund such costs shall expire.

4.6. Notwithstanding anything to the contrary in this Lease, Landlord and Tenant agree that all Tenant Improvements shall be programmed in accordance with the lab and office zones identified on Exhibit A-1 attached hereto.

5. Condition of Premises. Landlord represents to Tenant that, on the date on which Landlord delivers the Premises to Tenant with the Tenant Improvements (or the applicable portion thereof) Substantially Complete, all base building systems within the Premises (or the applicable portion thereof), including the HVAC (as hereinafter defined), electrical, life safety and plumbing systems, shall be in good working order (provided that the sole remedy for any breach of the foregoing representation shall be that Landlord shall promptly repair or remedy the violation of the foregoing representation at its sole cost, provided that Landlord may include the costs thereof in Operating Expenses to the extent that Landlord is permitted to do so under Article 9 below, and Tenant shall not be entitled to any monetary damages for any breach of such representation). Except as set forth in the immediately foregoing sentence, Tenant acknowledges that neither Landlord nor any agent of Landlord has made any representation or warranty with respect to the condition of the Premises, the Building or the Project, or with respect to the suitability of the Premises, the Building or the Project for the conduct of Tenant's business. Without in any way derogating from Landlord's ongoing maintenance, repair and restoration obligations set forth elsewhere in this Lease, Tenant acknowledges that (a) it is fully familiar with the condition of the Premises and subject to Landlord's obligation to complete the Tenant Improvements, agrees to take the same in its condition "as is" as of the Term Commencement Date and (b) except for the Tenant Improvements, Landlord shall have no obligation to alter, repair or otherwise prepare the Premises for Tenant's occupancy or to pay for or construct any improvements to the Premises, except for performance of the Tenant Improvements and with respect to payment of the TI Allowance. Tenant's taking of possession of the Premises shall, except as otherwise agreed to in writing by Landlord and Tenant, conclusively establish that the Premises, the Building and the Project were at such time in good, sanitary and satisfactory condition and repair.

6. Rentable Area.

6.1. The term "Rentable Area" shall reflect such areas as reasonably calculated by Landlord's architect in a manner consistent with Landlord's determination of Rentable Area for the remainder of the Building and Project, as the same may be reasonably adjusted from time to time by Landlord in consultation with Landlord's architect only to reflect a physical change to the outer walls, roof or basement of the Building, a physical change to those areas of the Building

not utilized as usable area, including that portion of the Building devoted to corridors, equipment rooms, restrooms, elevator lobby, atrium and mailroom, or a physical change to the demising walls of the Premises.

6.2. The Rentable Area of the Building is generally determined by making separate calculations of Rentable Area applicable to each floor within the Building and totaling the Rentable Area of all floors within the Building. The Rentable Area of a floor is computed by measuring to the outside finished surface of the permanent outer Building walls. The full area calculated as previously set forth is included as Rentable Area, without deduction for columns and projections or vertical penetrations, including stairs, elevator shafts, flues, pipe shafts, vertical ducts and the like, as well as such items' enclosing walls.

6.3. The term "Rentable Area," when applied to the Premises, is that area equal to the usable area of the Premises, plus an equitable allocation of Rentable Area within the Building that is not then utilized or expected to be utilized as usable area, including that portion of the Building devoted to corridors, equipment rooms, restrooms, elevator lobby, atrium and mailroom.

7. Rent.

7.1. Tenant shall pay to Landlord as Base Rent for the Premises, commencing on the date that is six (6) months after the Term Commencement Date (the "Rent Commencement Date"), the sums set forth in Section 2.3, subject to the rental adjustments provided in Article 8 hereof. Base Rent shall be paid in equal monthly installments as set forth in Section 2.3, subject to the rental adjustments provided in Article 8 hereof, each in advance on the first day of each and every calendar month during the Term.

7.2. In addition to Base Rent, Tenant shall pay to Landlord as additional rent ("Additional Rent") at times hereinafter specified in this Lease (a) Tenant's Adjusted Share (as defined below) of Operating Expenses (as defined below), (b) the Property Management Fee (as defined below), and (c) any other amounts that Tenant assumes or agrees to pay under the provisions of this Lease that are owed to Landlord, including any and all other sums that may become due by reason of any default of Tenant or failure on Tenant's part to comply with the agreements, terms, covenants and conditions of this Lease to be performed by Tenant, after notice and the lapse of any applicable cure periods.

7.3. Base Rent and Additional Rent shall together be denominated "Rent." Rent shall be paid to Landlord, without abatement, deduction or offset, in lawful money of the United States of America to the address set forth in Section 2.8 or to such other person or at such other place as Landlord may from time designate in writing. In the event the Term commences or ends on a day other than the first day of a calendar month, then the Rent for such fraction of a month shall be prorated for such period on the basis of the number of days in the month and shall be paid at the then-current rate for such fractional month.

7.4. Tenant's obligation to pay Rent shall not be discharged or otherwise affected by (a) any Applicable Laws now or hereafter applicable to the Premises, (b) any other restriction on

Tenant's use, (c) except as expressly provided herein, any casualty or taking or (d) any other occurrence; and Tenant waives all rights now or hereafter existing to terminate or cancel this Lease or quit or surrender the Premises or any part thereof, or to assert any defense in the nature of constructive eviction to any action seeking to recover rent. Tenant's obligation to pay Rent with respect to any period or obligations arising, existing or pertaining to the period prior to the date of the expiration or earlier termination of the Term or this Lease shall survive any such expiration or earlier termination; provided, however, that nothing in this sentence shall in any way affect Tenant's obligations with respect to any other period. Subject to the provisions of this Lease, Tenant shall have the right to injunctive relief or to seek judgements for direct money damages occasioned by Landlord's breach of its Lease covenants beyond notice and applicable cure periods (but may not set-off any such judgement against Rent or other amount owing hereunder). Nothing in this Section 7.4 shall limit the exercise of Tenant's express remedies on the terms and conditions set forth in Section 16.2 below.

8. Rent Adjustments. Base Rent shall be subject to an annual upward adjustment of three percent (3%) of the then-current Base Rent. The first such adjustment shall become effective commencing on the first (1st) annual anniversary of the Rent Commencement Date, and subsequent adjustments shall become effective on every successive annual anniversary for so long as this Lease continues in effect.

9. Operating Expenses.

9.1. As used herein, the term "Operating Expenses" shall include:

(a) Government impositions, including property tax costs consisting of real and personal property taxes (including amounts due under any improvement bond upon the Building or the Project (including the parcel or parcels of real property upon which the Building, the other buildings in the Project and areas serving the Building and the Project are located)) or assessments in lieu thereof imposed by any federal, state, regional, local or municipal governmental authority, agency or subdivision (each, a "Governmental Authority"); taxes on or measured by gross rentals received from the rental of space in the Project; taxes based on the square footage of the Premises, the Building or the Project, as well as any parking charges, utilities surcharges or any other costs levied, assessed or imposed by, or at the direction of, or arising from Applicable Laws or interpretations thereof, promulgated by any Governmental Authority in connection with the use or occupancy of the Project or the parking facilities serving the Project; taxes on this transaction or any document to which Tenant is a party creating or transferring an interest in the Premises; any fee for a business license to operate an office building; and any expenses, including the reasonable cost of attorneys or experts, reasonably incurred by Landlord in seeking reduction by the taxing authority of the applicable taxes, less tax refunds obtained as a result of an application for review thereof; and

(b) All other costs of any kind paid or incurred by Landlord in connection with the operation or maintenance of the Building and the Project, which shall include costs of repairs and replacements to improvements within the Project as appropriate to maintain the Project as required hereunder; costs of utilities furnished to the Common Area; sewer fees; cable

television; trash collection; cleaning, including windows; heating, ventilation and air-conditioning ("HVAC"); maintenance of landscaping and grounds; snow removal; maintenance of drives and parking areas; maintenance of the roof; security services and devices; building supplies; maintenance or replacement of equipment utilized for operation and maintenance of the Project; license, permit and inspection fees; sales, use and excise taxes on goods and services purchased by Landlord in connection with the operation, maintenance or repair of the Building or Project systems and equipment; telephone, postage, stationery supplies and other expenses incurred in connection with the operation, maintenance or repair of the Project; accounting, legal and other professional fees and expenses incurred in connection with the Project; costs of furniture, draperies, carpeting, landscaping supplies, snow removal and other customary and ordinary items of personal property provided by Landlord for use in the Common Area or the Project office; capital expenditures but only to the extent permitted by Section 9.1(c) below; costs of complying with Applicable Laws (except to the extent such costs are incurred to remedy non-compliance as of the Execution Date with Applicable Laws); costs to keep the Project in compliance with, or costs or fees otherwise required under or incurred pursuant to any Property Operations Documents (as defined below), including condominium fees; insurance premiums, including premiums for commercial general liability, property casualty, earthquake, terrorism and environmental coverages; portions of insured losses paid by Landlord as part of the deductible portion of a loss pursuant to the terms of insurance policies; service contracts; costs of services of independent contractors retained to do work of a nature referenced above; and costs of compensation (including employment taxes and fringe benefits) of all persons who perform regular and recurring duties connected with the day-to-day operation and maintenance of the Project, its equipment, the adjacent walks, landscaped areas, drives and parking areas, including janitors, floor waxers, window washers, watchmen, gardeners, sweepers, plow truck drivers, handymen, and engineering/maintenance/facilities personnel.

(c) Notwithstanding the foregoing, Operating Expenses shall not include any net income, franchise, capital stock, estate or inheritance taxes, or taxes that are the personal obligation of Tenant or of another tenant of the Project; any leasing commissions; expenses (including attorney fees and court costs) incurred in connection with (i) negotiations or disputes with tenants of the Property or other occupants or prospective tenants or other occupants, (ii) the enforcement of any leases or (iii) the defense of Landlord's title to, or interest in, the Building or any part thereof; costs (including permit, license, and inspection fees) incurred in connection with preparing rental space for a tenant, that relate to preparation of rental space for a tenant; expenses of initial development and construction, including grading, paving, landscaping and decorating (as distinguished from maintenance, repair and replacement of the foregoing); Landlord's costs of any services provided to tenants or other occupants for which Landlord is actually reimbursed by such tenants or other occupants (other than reimbursement through Operating Expenses) as an additional charge or rental over and above the basic rent (and escalations thereof) payable under the lease with such tenant or other occupant; costs in connection with services that are provided to another tenant or occupant of the Building, but are not offered to Tenant; capital expenditures, except for those incurred (i) in replacing obsolete equipment, (ii) for the primary purpose of reducing Operating Expenses, or (iii) required to comply with changes in Applicable Laws that take effect after the Execution Date of the Lease, in each case amortized over the useful life thereof (but in no event more than ten (10) years), as

reasonably determined by Landlord; costs (i.e., interest and penalties) incurred due to Landlord's default of this Lease or any other lease, mortgage, or other agreement, in each case affecting the Building or Property; payments to subsidiaries or affiliates of Landlord, or to any other party, in each case as a result of a non-arm's length transaction, for management or other services for the Building, or for supplies or other materials for the Building, to the extent that such payments exceed arm's length competitive prices in the Cambridge, Massachusetts market for the services, supplies or materials provided; Landlord's legal existence and general corporate overhead and general administrative expenses; legal expenses relating to other tenants; costs of repairs to the extent reimbursed by payment of insurance proceeds received by Landlord; advertising and promotional expenditures directly related to Landlord's efforts to lease space in the Building; the cost of repairs of other work occasioned by fire, windstorm or other insured casualty, to the extent Landlord actually receives proceeds of such insurance for such repairs or other work; debt service; interest upon loans to Landlord or secured by mortgage or deed of trust covering the Project or a portion thereof or any other debt of Landlord (provided that interest upon a government assessment or improvement bond payable in installments shall constitute an Operating Expense under Subsection 9.1(a)); rental payments under any ground lease; the cost of correcting defects in the construction of the Building, Building equipment, parking lot or other site improvements, but only to the extent such costs are covered by and actually reimbursed to Landlord under any applicable warranty or service contract held by Landlord; costs incurred directly and solely as a result of Landlord's gross negligence or willful misconduct; salaries of executive officers of Landlord; depreciation claimed by Landlord for tax purposes (provided that this exclusion of depreciation is not intended to delete from Operating Expenses actual costs of repairs and replacements); taxes that are excluded from Operating Expenses by the last sentence of Subsection 9.1(a); costs or expenses incurred in connection with the financing or sale of the Project or any portion thereof; costs expressly excluded from Operating Expenses elsewhere in this Lease or that are charged to or paid by Tenant under other provisions of this Lease; professional fees and disbursements and other costs and expenses related to the ownership (as opposed to the use, occupancy, operation, maintenance or repair) of the Project; political and charitable contributions; and any item that, if included in Operating Expenses, would involve a double collection for such item by Landlord. To the extent that Tenant uses more than Tenant's Pro Rata Share of any item of Operating Expenses, Tenant shall pay Landlord for such excess in addition to Tenant's obligation to pay Tenant's Pro Rata Share of Operating Expenses (such excess, together with Tenant's Pro Rata Share, "Tenant's Adjusted Share").

9.2. Tenant shall pay to Landlord on the first day of each calendar month of the Term from and after the Rent Commencement Date, as Additional Rent, (a) the Property Management Fee (as defined below) and (b) Landlord's estimate of Tenant's Adjusted Share of Operating Expenses with respect to the Building and the Project, as applicable, for such month.

(x) The "Property Management Fee" shall equal two and five tenths percent (2.5%) of Base Rent due from Tenant. Tenant shall pay the Property Management Fee in accordance with Section 9.2 with respect to the entire Term, including any extensions thereof or any holdover periods, regardless of whether Tenant is obligated to pay Base Rent, Operating Expenses or any other Rent with respect to any such period or portion thereof.

(y) Within ninety (90) days after the conclusion of each calendar year (or such longer period as may be reasonably required by Landlord not to exceed one hundred eighty (180) days), Landlord shall furnish to Tenant a statement showing in reasonable detail the actual Operating Expenses, Tenant's Adjusted Share of Operating Expenses, and the cost of providing utilities to the Premises for the previous calendar year ("Landlord's Statement"). Any additional sum due from Tenant to Landlord shall be due and payable within thirty (30) days after receipt of an invoice therefor. If the amounts paid by Tenant pursuant to this Section exceed Tenant's Adjusted Share of Operating Expenses for the previous calendar year, then Landlord shall credit the difference against the Rent next due and owing from Tenant; provided that, if the Lease term has expired, Landlord shall accompany Landlord's Statement with payment for the amount of such difference.

(z) Any amount due under this Section for any period that is less than a full month shall be prorated for such fractional month on the basis of the number of days in the month.

9.3. Landlord may, from time to time, modify Landlord's calculation and allocation procedures for Operating Expenses, so long as such modifications produce Dollar results substantially consistent with Landlord's then-current practice at the Project. Landlord or an affiliate(s) of Landlord currently own other property(ies) adjacent to the Project or its neighboring properties (collectively, "Neighboring Properties"). In connection with Landlord performing services for the Project pursuant to this Lease, similar services may be performed by the same vendor(s) for Neighboring Properties. In such a case, Landlord shall reasonably allocate to each Building and the Project the costs for such services based upon the ratio that the square footage of the Building or the Project (as applicable) bears to the total square footage of all of the Neighboring Properties or buildings within the Neighboring Properties for which the services are performed, unless the scope of the services performed for any building or property (including the Building and the Project) is disproportionately more or less than for others, in which case Landlord shall equitably allocate the costs based on the scope of the services being performed for each building or property (including the Building and the Project). Since the Project consists of multiple buildings, certain Operating Expenses may pertain to a particular building(s) and other Operating Expenses to the Project as a whole. Landlord reserves the right in its sole discretion to allocate any such costs applicable to any particular building within the Project to such building, and other such costs applicable to the Project to each building in the Project (including the Building), with the tenants in each building being responsible for paying their respective proportionate shares of their buildings to the extent required under their leases. Landlord shall allocate such costs to the buildings (including the Building) in a reasonable, non-discriminatory manner, and such allocation shall be binding on Tenant.

9.4. Landlord's annual statement shall be final and binding upon Tenant unless Tenant, within thirty (30) days after Tenant's receipt thereof, shall contest any item therein by giving written notice to Landlord, specifying each item contested and the reasons therefor; provided that Tenant shall in all events pay the amount specified in Landlord's annual statement, pending the results of the Independent Review and determination of the Accountant(s), as applicable and as each such term is defined below. If, during such thirty (30)-day period, Tenant

reasonably and in good faith questions or contests the correctness of Landlord's statement of Tenant's Adjusted Share of Operating Expenses, Landlord shall provide Tenant with reasonable access to Landlord's books and records to the extent relevant to determination of Operating Expenses, and such information as Landlord reasonably determines to be responsive to Tenant's written inquiries. In the event that, after Tenant's review of such information, Landlord and Tenant cannot agree upon the amount of Tenant's Adjusted Share of Operating Expenses, then Tenant shall have the right to have an independent public accounting firm hired by Tenant on an hourly basis and not on a contingent-fee basis (at Tenant's sole cost and expense) and approved by Landlord (which approval Landlord shall not unreasonably withhold or delay) audit and review such of Landlord's books and records for the year in question as directly relate to the determination of Operating Expenses for such year (the "Independent Review"), but not books and records of entities other than Landlord. Landlord shall make such books and records available at the location where Landlord maintains them in the ordinary course of its business. Landlord need not provide copies of any books or records. Tenant shall commence the Independent Review within thirty (30) days after the date Landlord has given Tenant access to Landlord's books and records for the Independent Review. Tenant shall complete the Independent Review and notify Landlord in writing of Tenant's specific objections to Landlord's calculation of Operating Expenses (including Tenant's accounting firm's written statement of the basis, nature and amount of each proposed adjustment) no later than sixty (60) days after Landlord has first given Tenant access to Landlord's books and records for the Independent Review. Landlord shall review the results of any such Independent Review. The parties shall endeavor to agree promptly and reasonably upon Operating Expenses taking into account the results of such Independent Review. If, as of the date that is sixty (60) days after Tenant has submitted the Independent Review to Landlord, the parties have not agreed on the appropriate adjustments to Operating Expenses, then the parties shall engage a mutually agreeable independent third party accountant with at least ten (10) years' experience in commercial real estate accounting in the Cambridge, Massachusetts area (the "Accountant"). If the parties cannot agree on the Accountant, each shall within ten (10) days after such impasse appoint an Accountant (different from the accountant and accounting firm that conducted the Independent Review) and, within ten (10) days after the appointment of both such Accountants, those two Accountants shall select a third (which cannot be the accountant and accounting firm that conducted the Independent Review). If either party fails to timely appoint an Accountant, then the Accountant the other party appoints shall be the sole Accountant. Within ten (10) days after appointment of the Accountant(s), Landlord and Tenant shall each simultaneously give the Accountants (with a copy to the other party) its determination of Operating Expenses, with such supporting data or information as each submitting party determines appropriate. Within ten (10) days after such submissions, the Accountants shall by majority vote select either Landlord's or Tenant's determination of Operating Expenses. The Accountants may not select or designate any other determination of Operating Expenses. The determination of the Accountant(s) shall bind the parties. If the parties agree or the Accountant(s) determine that the Operating Expenses actually paid by Tenant for the calendar year in question exceeded Tenant's obligations for such calendar year, then Landlord shall, at Tenant's option, either (a) credit the excess to the next succeeding installments of estimated Additional Rent or (b) pay the excess to Tenant within thirty (30) days after delivery of such results. If the parties agree or the Accountant(s) determine that Tenant's payments of Operating Expenses for such calendar year were less than Tenant's obligation for the calendar year, then Tenant shall pay the deficiency to Landlord within thirty (30) days after delivery of such results. If the Independent Review reveals or the Accountant(s)

determine that the Operating Expenses billed to Tenant by Landlord and paid by Tenant to Landlord for the applicable calendar year in question exceeded by more than ten percent (10%) what Tenant should have been billed during such calendar year, then Landlord shall pay the reasonable cost of the Independent Review. In all other cases Tenant shall pay the cost of the Independent Review and the Accountant(s).

9.5. Tenant shall not be responsible for Operating Expenses with respect to any time period prior to the Term Commencement Date; provided, however, that if Landlord shall permit Tenant possession of the Premises prior to the Term Commencement Date other than for the sole purpose of installing its trade fixtures, equipment or personal property (in which case, Tenant shall pay those charges specified in Section 4.3 of this Lease), Tenant shall be responsible for Operating Expenses from such earlier date of possession (the Term Commencement Date or such earlier date, as applicable, the "Expense Trigger Date"); and provided, further, that Landlord may annualize certain Operating Expenses incurred prior to the Expense Trigger Date over the course of the budgeted year during which the Expense Trigger Date occurs, and Tenant shall be responsible for the annualized portion of such Operating Expenses corresponding to the number of days during such year, commencing with the Expense Trigger Date, for which Tenant is otherwise liable for Operating Expenses pursuant to this Lease. Tenant's responsibility for Tenant's Adjusted Share of Operating Expenses shall continue to the latest of (a) the date of termination of the Lease, (b) the date Tenant has fully vacated the Premises and (c) if termination of the Lease is due to a default by Tenant, the date of rental commencement of a replacement tenant.

9.6. Operating Expenses for the calendar year in which Tenant's obligation to share therein commences and for the calendar year in which such obligation ceases shall be prorated based upon the number of days in the applicable month. Expenses such as taxes, assessments and insurance premiums that are incurred for an extended time period shall be prorated based upon the time periods to which they apply so that the amounts attributed to the Premises relate in a reasonable manner to the time period wherein Tenant has an obligation to share in Operating Expenses.

9.7. Within thirty (30) days after the end of each calendar year quarter (*i.e.* by April 30, July 30, October 30 and January 30) in which Tenant believes it is entitled to reimbursement from Landlord pursuant to the terms of this Lease, Tenant shall submit to Landlord an invoice, or, in the event an invoice is not available, an itemized list, of all costs and expenses that (a) Tenant has incurred (either internally or by employing third parties) during the prior month and (b) for which Tenant reasonably believes it is entitled to reimbursements from Landlord pursuant to the terms of this Lease or the Work Letter. Tenant's failure to send any submittal required by this Section 9.7 shall not be a default of Tenant hereunder nor shall it constitute a waiver of Tenant's right to seek reimbursement from Landlord, however, Tenant shall promptly respond to any written requests from Landlord requesting any such submittal, and to the extent Tenant is seeking any such reimbursement it shall provide the information required under this Section 9.7 in connection with any request for reimbursement.

9.8. In the event that the Building or Project is less than fully occupied during a calendar year, Tenant acknowledges that Landlord may extrapolate Operating Expenses that vary

depending on the occupancy of the Building or Project, as applicable, to equal Landlord's reasonable estimate of what such Operating Expenses would have been had the Building or Project, as applicable, been ninety-five percent (95%) occupied during such calendar year; provided, however, that Landlord shall not recover more than one hundred percent (100%) of Operating Expenses.

10. Taxes on Tenant's Property.

10.1. Tenant shall pay prior to delinquency any and all taxes levied against (a) personal property and trade fixtures located at the Premises and (b) any gross or net receipts of or sales by Tenant.

10.2. If any such taxes on Tenant's personal property or trade fixtures are levied against Landlord or Landlord's property or, if the assessed valuation of the Building, the Property or the Project is increased by inclusion therein of a value attributable to Tenant's personal property or trade fixtures, and if Landlord, after written notice to Tenant, pays the taxes based upon any such increase in the assessed value of the Building, the Property or the Project, then Tenant shall, upon demand, repay to Landlord the taxes so paid by Landlord.

10.3. If any improvements in or alterations to the Premises, made or requested by Tenant, whether owned by Landlord or Tenant and whether or not affixed to the real property so as to become a part thereof, are assessed for real property tax purposes at a valuation higher than the valuation at which improvements conforming to Landlord's building standards (the "Building Standard") in other spaces in the Building are assessed, then the real property taxes and assessments levied against Landlord or the Building, the Property or the Project by reason of such excess assessed valuation shall be deemed to be taxes levied against personal property of Tenant and shall be governed by the provisions of Section 10.2. Any such excess assessed valuation due to improvements in or alterations to space in the Project leased by other tenants at the Project shall not be included in Operating Expenses. If the records of the applicable governmental assessor's office are available and sufficiently detailed to serve as a basis for determining whether such Tenant improvements or alterations are assessed at a higher valuation than the Building Standard, then such records shall be binding on both Landlord and Tenant.

11. Security Deposit.

11.1. Tenant shall deposit with Landlord on or before the Execution Date the sum set forth in Section 2.6 (the "Security Deposit"), which sum shall be held by Landlord as security for the faithful performance by Tenant of all of the terms, covenants and conditions of this Lease to be kept and performed by Tenant during the Term and ending upon the expiration or termination of Tenant's obligations under this Lease. If Tenant Defaults (as defined below) with respect to any provision of this Lease, including any provision relating to the payment of Rent, then Landlord may (but shall not be required to) use, apply or retain all or any part of the Security Deposit for the payment of any Rent or any other sum in default, or to compensate Landlord for any other loss or damage that Landlord may suffer by reason of Tenant's default. If any portion

of the Security Deposit is so used or applied, then Tenant shall, within ten (10) days following demand therefor, deposit cash with Landlord in an amount sufficient to restore the Security Deposit to its original amount, and Tenant's failure to do so shall be a material breach of this Lease. The provisions of this Article shall survive the expiration or earlier termination of this Lease.

11.2. In the event of bankruptcy or other debtor-creditor proceedings against Tenant, the Security Deposit shall be deemed to be applied first to the payment of Rent and other charges due Landlord for all periods prior to the filing of such proceedings.

11.3. Landlord may deliver to any purchaser of Landlord's interest in the Premises the funds deposited hereunder by Tenant, and thereupon Landlord shall be discharged from any further liability with respect to such deposit. This provision shall also apply to any subsequent transfers.

11.4. If Tenant shall fully and faithfully perform every provision of this Lease to be performed by it, then the Security Deposit, or any balance thereof, shall be returned to Tenant (or, at Landlord's option, to the last assignee of Tenant's interest hereunder) within thirty (30) days after the expiration or earlier termination of this Lease.

11.5. If the Security Deposit shall be in cash, Landlord shall hold the Security Deposit in an account at a banking organization selected by Landlord; provided, however, that Landlord shall not be required to maintain a separate account for the Security Deposit, but may intermingle it with other funds of Landlord. Landlord shall be entitled to all interest and/or dividends, if any, accruing on the Security Deposit. Landlord shall not be required to credit Tenant with any interest for any period during which Landlord does not receive interest on the Security Deposit.

11.6. The Security Deposit may be in the form of cash, a letter of credit or any other security instrument acceptable to Landlord in its sole discretion. Tenant may at any time, except when Tenant is in Default (as defined below), deliver a letter of credit (the "L/C Security") as the entire Security Deposit, as follows:

(a) If Tenant elects to deliver L/C Security, then Tenant shall provide Landlord, and maintain in full force and effect throughout the Term and until the date that is six (6) months after the then-current Term Expiration Date, a letter of credit in the form of Exhibit E issued by an issuer reasonably satisfactory to Landlord, in the amount of the Security Deposit, with an initial term of at least one year. Landlord may require the L/C Security to be re-issued by a different issuer at any time during the Term if Landlord reasonably believes that the issuing bank of the L/C Security is or may soon become insolvent; provided, however, Landlord shall return the existing L/C Security to the existing issuer immediately upon receipt of the substitute L/C Security. If any issuer of the L/C Security shall become insolvent or placed into FDIC receivership, then Tenant shall immediately deliver to Landlord (without the requirement of notice from Landlord) substitute L/C Security issued by an issuer reasonably satisfactory to Landlord, and otherwise conforming to the requirements set forth in this Article. As used herein with respect to the issuer of the L/C Security, "insolvent" shall mean the determination of insolvency as made by such issuer's primary bank regulator (*i.e.*, the state bank supervisor for state chartered banks; the OCC or OTS, respectively, for federally chartered banks or thrifts; or

the Federal Reserve for its member banks). If, at the Term Expiration Date, any Rent remains uncalculated or unpaid, then (i) Landlord shall with reasonable diligence complete any necessary calculations, (ii) Tenant shall extend the expiry date of such L/C Security from time to time as Landlord reasonably requires and (iii) in such extended period, Landlord shall not unreasonably refuse to consent to an appropriate reduction of the L/C Security. Tenant shall reimburse Landlord's legal costs (as estimated by Landlord's counsel and not to exceed $3,000) in handling Landlord's acceptance of L/C Security or its replacement or extension.

(b) If Tenant delivers to Landlord satisfactory L/C Security in place of the entire Security Deposit, Landlord shall remit to Tenant any cash Security Deposit Landlord previously held.

(c) Landlord may draw upon the L/C Security, and hold and apply the proceeds in the same manner and for the same purposes as the Security Deposit, if (i) an uncured Default (as defined below) exists, (ii) as of the date that is forty-five (45) days before any L/C Security expires (even if such scheduled expiry date is after the Term Expiration Date) Tenant has not delivered to Landlord an amendment or replacement for such L/C Security, reasonably satisfactory to Landlord, extending the expiry date to the earlier of (1) six (6) months after the then-current Term Expiration Date or (2) the date that is one year after the then-current expiry date of the L/C Security, (iii) the L/C Security provides for automatic renewals, Landlord asks the issuer to confirm the current L/C Security expiry date, and the issuer fails to do so within ten (10) business days, (iv) Tenant fails to pay (when and as Landlord reasonably requires) any bank charges for Landlord's transfer of the L/C Security or (v) the issuer of the L/C Security ceases, or announces that it will cease, to maintain an office in the city where Landlord may present drafts under the L/C Security (and fails to permit drawing upon the L/C Security by overnight courier or facsimile). This Section does not limit any other provisions of this Lease allowing Landlord to draw the L/C Security under specified circumstances.

(d) Tenant shall not seek to enjoin, prevent, or otherwise interfere with Landlord's draw under L/C Security, even if it violates this Lease. Tenant acknowledges that the only effect of a wrongful draw would be to substitute a cash Security Deposit for L/C Security, causing Tenant no legally recognizable damage. Landlord shall hold the proceeds of any draw in the same manner and for the same purposes as a cash Security Deposit. In the event of a wrongful draw, the parties shall cooperate to allow Tenant to post replacement L/C Security simultaneously with the return to Tenant of the wrongfully drawn sums, and Landlord shall upon request confirm in writing to the issuer of the L/C Security that Landlord's draw was erroneous.

(e) If Landlord transfers its interest in the Premises, then Tenant shall at Tenant's expense, within five (5) business days after receiving a request from Landlord, deliver (and, if the issuer requires, Landlord shall consent to) an amendment to the L/C Security naming Landlord's grantee as substitute beneficiary. If the required Security Deposit changes while L/C Security is in force, then Tenant shall deliver (and, if the issuer requires, Landlord shall consent to) a corresponding amendment to the L/C Security.

12. Use.

12.1. Tenant shall use the Premises for the Permitted Use, and shall not use the Premises, or permit or suffer the Premises to be used, for any other purpose without Landlord's prior written consent, which consent Landlord may withhold in its sole and absolute discretion.

12.2. Tenant shall not use or occupy the Premises in violation of Applicable Laws; zoning ordinances; or the certificate of occupancy (or its substantial equivalent) issued for the Building or the Project, and shall, upon five (5) days' written notice from Landlord, discontinue any use of the Premises that is declared or claimed by any Governmental Authority having jurisdiction to be a violation of any of the above, or that in Landlord's reasonable opinion violates any of the above. Tenant shall comply with any direction of any Governmental Authority having jurisdiction that shall, by reason of the nature of Tenant's use or occupancy of the Premises, impose any duty upon Tenant or Landlord with respect to the Premises or with respect to the use or occupation thereof, and shall indemnify, defend (at Landlord's option and with counsel reasonably acceptable to Landlord) and hold harmless (collectively, "Indemnify," "Indemnity" or "Indemnification," as the case may require) the Landlord and its affiliates, employees, agents and contractors; and any lender, mortgagee, ground lessor or beneficiary (each, a "Lender" and, collectively with Landlord and its affiliates, employees, agents and contractors, the "Landlord Indemnitees") harmless from and against any and all demands, claims, liabilities, losses, costs, expenses, actions, causes of action, damages, suits or judgments, and all reasonable expenses (including reasonable attorneys' fees, charges and disbursements, regardless of whether the applicable demand, claim, action, cause of action or suit is voluntarily withdrawn or dismissed) incurred in investigating or resisting the same (collectively, "Claims") of any kind or nature that arise before, during or after the Term as a result of Tenant's breach of this Section.

12.3. Tenant shall not do or permit to be done anything that will invalidate or increase the cost of any fire, environmental, extended coverage or any other insurance policy covering the Building or the Project, and shall comply with all reasonable rules, orders, regulations and requirements of the insurers of the Building and the Project, and Tenant shall promptly, upon demand, reimburse Landlord for any additional premium charged for such policy by reason of Tenant's failure to comply with the provisions of this Article.

12.4. Tenant shall keep all doors opening onto public corridors closed, except when in use for ingress and egress.

12.5. No additional locks or bolts of any kind shall be placed upon any of the doors or windows by Tenant, nor shall any changes be made to existing locks or the mechanisms thereof without Landlord's prior written consent, which shall not be unreasonably withheld, conditioned or delayed. Tenant shall, upon termination of this Lease, return to Landlord all keys to offices and restrooms either furnished to or otherwise procured by Tenant. In the event any key so furnished to Tenant is lost, Tenant shall pay to Landlord the cost of replacing the same or of changing the lock or locks opened by such lost key if Landlord shall deem it necessary to make such change.

12.6. No awnings or other projections shall be attached to any outside wall of the Building. No curtains, blinds, shades or screens shall be attached to or hung in, or used in connection with, any window or door of the Premises other than Landlord's standard window coverings. Neither the interior nor exterior of any windows shall be coated or otherwise sunscreened without Landlord's prior written consent, nor shall any bottles, parcels or other articles be placed on the windowsills or items attached to windows that are visible from outside the Premises. No equipment, furniture or other items of personal property shall be placed on any exterior balcony without Landlord's prior written consent.

12.7. No sign, advertisement or notice ("Signage") shall be exhibited, painted or affixed by Tenant on any part of the Premises or the Building without Landlord's prior written consent. Signage shall conform to Landlord's design criteria. For any Signage, Tenant shall, at Tenant's own cost and expense, (a) acquire all permits for such Signage in compliance with Applicable Laws and (b) design, fabricate, install and maintain such Signage in a first-class condition. Tenant shall be responsible for reimbursing Landlord for costs incurred by Landlord in removing any of Tenant's Signage upon the expiration or earlier termination of the Lease. Interior signs in the Building lobby and the directory tablet shall be inscribed, painted or affixed for Tenant by Landlord at Landlord's sole cost and expense, and shall be of a size, color and type and be located in a place acceptable to Landlord. The directory tablet shall be provided exclusively for the display of the name and location of tenants only. Tenant shall not place anything on the exterior of the corridor walls or corridor doors other than Landlord's standard lettering. Tenant, at Tenant's sole cost and expense, shall have Signage rights for the primary entrance to the Premises substantially consistent with the Signage permitted for comparable Tenants in the Project, as Landlord reasonably determines. At Landlord's option, Landlord may install any Tenant Signage, and Tenant shall pay all costs associated with such installation within thirty (30) days after demand therefor. Landlord, at its expense shall place a sign panel identifying Tenant on the Landlord's monument sign outside of the Building similar to and consistent with the design and location of other sign panels identifying tenants in the Building. Tenant shall not have any such monument signage rights if it assigns this Lease (excluding an assignment of this Lease that is an Exempt Transfer) or if Tenant subleases more than fifty percent (50%) of the Rentable Area of the Premises. Tenant shall pay as Additional Rent all costs and expenses incurred by Landlord in changing the identification of Tenant on such monument sign arising after the Commencement Date, including any removal of Tenant's identification from such monument sign pursuant to the immediately foregoing sentence.

12.8. Tenant may only place equipment within the Premises with floor loading consistent with the Building's structural design unless Tenant obtains Landlord's prior written approval. Tenant may place such equipment only in a location designed to carry the weight of such equipment.

12.9. Tenant shall cause any equipment or machinery to be installed in the Premises so as to reasonably prevent sounds or vibrations therefrom from extending into the Common Area or other offices in the Project.

12.10. Tenant shall not (a) do or permit anything to be done in or about the Premises that shall in any way obstruct or interfere with the rights of other tenants or occupants of the Project, or injure or annoy them, (b) use or allow the Premises to be used for immoral, unlawful or

objectionable purposes, (c) cause, maintain or permit any nuisance or waste in, on or about the Project or (d) take any other action that would in Landlord's reasonable determination in any manner adversely affect other tenants' quiet use and enjoyment of their space or adversely impact their ability to conduct business in a professional and suitable work environment. Notwithstanding anything in this Lease to the contrary, Tenant may not install any security systems (including cameras) outside the Premises or that record sounds or images outside the Premises without Landlord's prior written consent, which Landlord may withhold in its sole and absolute discretion.

12.11. Notwithstanding any other provision herein to the contrary, from and after the Term Commencement Date, Tenant shall be responsible for all liabilities, costs and expenses arising out of or in connection with the compliance of the Premises with the Americans with Disabilities Act, 42 U.S.C. § 12101, et seq., and any state and local accessibility laws, codes, ordinances and rules (collectively, and together with regulations promulgated pursuant thereto, the "ADA") (except to the extent that any such non-compliance of the Premises with the ADA (as in effect and interpreted as of the Term Commencement Date) existed as of the Term Commencement Date), and Tenant shall Indemnify the Landlord Indemnitees from and against Claims arising out of any such failure of the Premises to comply with the Tenant's obligations with respect to the ADA under this Section. Landlord shall be responsible for all liabilities, costs and expenses arising out of or in connection with the compliance of the Common Areas with the ADA (which costs may be included in Operating Expenses to the extent permitted in Article 9 except to the extent that any such non-compliance of the Common Areas with the ADA (as in effect and interpreted as of the Term Commencement Date) existed as of the Term Commencement Date). This Section (as well as any other provisions of this Lease dealing with Indemnification of the Landlord Indemnitees by Tenant) shall be deemed to be modified in each case by the insertion in the appropriate place of the following: "except as otherwise provided in Mass. G.L. Ter. Ed., C. 186, Section 15." For the avoidance of doubt, "Lenders" shall also include historic tax credit investors and new market tax credit investors. The provisions of this Section shall survive the expiration or earlier termination of this Lease.

12.12. Tenant shall maintain temperature and humidity in the Premises in accordance with ASHRAE standards at all times.

12.13. Tenant shall establish and maintain a chemical safety program administered by a licensed, qualified individual in accordance with the requirements of the Massachusetts Water Resources Authority ("MWRA") and any other applicable Governmental Authority. Tenant shall be solely responsible for all costs incurred in connection with such chemical safety program, and Tenant shall provide Landlord with such documentation as Landlord may reasonably require evidencing Tenant's compliance with the requirements of (a) the MWRA and any other applicable Governmental Authority with respect to such chemical safety program and (b) this Section. Tenant shall be required to obtain and maintain during the Term (m) any permit required by the MWRA ("MWRA Permit") and (n) a wastewater treatment operator license from the Commonwealth of Massachusetts with respect to Tenant's Acid Neutralization Tank (as defined below) in the Building. Tenant shall not introduce anything into the Acid Neutralization Tank (x) in violation of the terms of the MWRA Permit, (y) in violation of Applicable Laws or (z) that would interfere with the proper functioning of the Acid Neutralization Tank. Landlord

agrees to reasonably cooperate with Tenant in order for Tenant to obtain the MWRA Permit and the wastewater treatment operator license, without any obligation for Landlord to incur any costs in connection therewith. Tenant shall reimburse Landlord within ten (10) business days after demand for any costs incurred by Landlord pursuant to this Section.

13. Rules and Regulations, CC&Rs, Parking Facilities and Common Area.

13.1. Tenant shall have the non-exclusive right, in common with others, to use the Common Area in conjunction with Tenant's use of the Premises for the Permitted Use, and such use of the Common Area and Tenant's use of the Premises shall be subject to the rules and regulations adopted by Landlord and attached hereto as Exhibit F, together with such other reasonable and nondiscriminatory rules and regulations as are hereafter reasonably promulgated by Landlord in its sole and absolute discretion (the "Rules and Regulations"). Tenant shall ensure that its contractors, subcontractors, employees, subtenants and invitees faithfully observe and comply with the Rules and Regulations. Landlord shall not be responsible to Tenant for the violation or non-performance by any other tenant or any agent, employee or invitee thereof of any of the Rules and Regulations.

13.2. This Lease is subject to any recorded covenants, conditions or restrictions on the Project or Property (including the Parking and Transportation Demand Management Plan Ordinance- Final Amendment Decision, issued on May 24, 2002, by the City of Cambridge (as the same may be amended from time to time, the "PTDM") , as the same may be amended, amended and restated, supplemented or otherwise modified from time to time (the "CC&Rs") and Tenant shall, at its sole cost and expense, comply with and cause the Project to comply with the CC&Rs and the documents listed on Exhibit G attached hereto (together with the PTDM, the "Property Operations Documents"). Tenant acknowledges that Tenant, at its sole cost and expense, shall comply with the tenant requirements in the PTDM, including the requirements set forth in the "Alternative Work Programs," "Public Transportation Incentives," "Ridesharing Programs" and "Provisions of Bicycle and Pedestrian Amenities" sections thereof. Tenant, at its sole cost and expense, shall also comply with the reporting requirements set forth in the PTDM at Landlord's request. Any costs incurred by Landlord in connection with the PTDM shall constitute an Operating Expense.

13.3. The Charles River Transportation Management Association (of which Landlord or an affiliate of Landlord is currently a member) provides certain programs to help improve transportation in the Cambridge area. Their website is www.charlesrivertma.org.

13.4. Tenant shall have a non-exclusive, irrevocable license to use forty (40) parking spaces in the facilities serving the Building and the Project in common on an unreserved basis with other tenants of the Building and the Project during the Term at a cost of Three Hundred Twenty Dollars ($320.00) per parking space per month (subject to market rate adjustment by Landlord from time to time throughout the Term), which Tenant shall pay simultaneously with payments of Base Rent as Additional Rent. Tenant, at any time and from time to time during the Term, may elect to waive its right to use some or all or its parking spaces upon written notice to Landlord. If Tenant so elects, then it shall forfeit for the then-remainder of the Term (including any extension thereof) any and all rights to such waived parking spaces.

13.5. Tenant agrees not to unreasonably overburden the parking facilities and agrees to cooperate with Landlord and other tenants in the use of the parking facilities, and Landlord hereby agrees that Tenant shall not be deemed to be overburdening the parking facilities if Tenant is using the number of spaces (or fewer) then allocated to Tenant and Tenant is otherwise complying with any rules and regulations concerning the parking facilities. Landlord reserves the right to determine that parking facilities are becoming overcrowded and to limit Tenant's use thereof. Upon such determination, Landlord may reasonably allocate parking spaces among Tenant and other tenants of the Building or the Project; provided, however, that Landlord shall not be permitted to reduce the number of parking spaces to which Tenant is then entitled to use under this Lease. Nothing in this Section, however, is intended to create an affirmative duty on Landlord's part to monitor parking.

13.6. Subject to the terms of this Lease including the Rules and Regulations and the rights of other tenants of the Building, Tenant shall have the non-exclusive right, at no additional cost and on an unreserved basis, subject to Section 4 of the Rules and Regulations, to access the freight loading dock and freight elevator twenty-four (24) hours per day, seven (7) days per week, at no additional cost. Landlord shall not be responsible for any coordination of the use of the freight elevator or the loading dock by tenants at the Building. Landlord shall provide a dumpster and/or trash compactor at the loading dock for Tenant's use for the disposal of non-Hazardous Materials, and Tenant shall pay Tenant's Adjusted Share of the cost of said dumpster and/or trash compactor. Tenant shall be solely responsible for the disposal of any Hazardous Materials in accordance with Applicable Laws.

14. Project Control by Landlord.

14.1. Landlord reserves full control over the Building and the Project to the extent not inconsistent with Tenant's enjoyment of the Premises as provided by this Lease. This reservation includes Landlord's right to subdivide the Project; convert the Building and the other buildings within the Project to condominium units; change the size of the Project by selling all or a portion of the Project or adding real property and any improvements thereon to the Project; grant easements and licenses to third parties; maintain or establish ownership of the Building separate from fee title to the Property; make additions to or reconstruct portions of the Building and the Project; install, use, maintain, repair, replace and relocate for service to the Premises and other parts of the Building or the Project pipes, ducts, conduits, wires and appurtenant fixtures, wherever located in the Premises, the Building or elsewhere at the Project; and alter or relocate any other Common Area or facility, including private drives, lobbies, entrances and landscaping; provided, however, that such rights shall be exercised in a way that does not materially adversely affect Tenant's beneficial use and occupancy of the Premises, including the Permitted Use and Tenant's access to the Premises. Tenant acknowledges that Landlord specifically reserves the right to allow the exclusive use of corridors and restroom facilities located on specific floors to one or more tenants occupying such floors; provided, however, that Tenant shall not be deprived of the use of the corridors reasonably required to serve the Premises or of restroom facilities serving the floor upon which the Premises are located.

14.2. Possession of areas of the Premises necessary for utilities, services, safety and operation of the Building is reserved to Landlord.

14.3. Tenant shall, at Landlord's request, promptly execute such further documents as may be reasonably appropriate to assist Landlord in the performance of its obligations hereunder; provided that Tenant need not execute any document that creates additional liability for Tenant or that deprives Tenant of the quiet enjoyment and use of the Premises as provided for in this Lease.

14.4. Landlord may, at any and all reasonable times during non-business hours (or during business hours, if (a) with respect to Subsections 14.4(u) through 14.4(y), Tenant so requests, and (b) with respect to Subsection 14.4(z), if Landlord so requests), and upon twenty-four (24) hours' prior notice (which may be oral or by email to the office manager or other Tenant-designated individual at the Premises; but provided that no time restrictions shall apply or advance notice be required if an emergency necessitates immediate entry), enter the Premises to (u) inspect the same and to determine whether Tenant is in compliance with its obligations hereunder, (v) supply any service Landlord is required to provide hereunder, (w) alter, improve or repair any portion of the Building other than the Premises for which access to the Premises is reasonably necessary, (x) post notices of nonresponsibility, (y) access the telephone equipment, electrical substation and fire risers and (z) show the Premises to prospective tenants during the final year of the Term and current and prospective purchasers and lenders at any time. In connection with any such alteration, improvement or repair as described in Subsection 14.4(w), Landlord may erect in the Premises or elsewhere in the Project scaffolding and other structures reasonably required for the alteration, improvement or repair work to be performed. In no event shall Tenant's Rent abate as a result of Landlord's activities pursuant to this Section; provided, however, that all such activities shall be conducted in such a manner so as to cause as little interference to Tenant as is reasonably possible. Landlord shall at all times retain a key with which to unlock all of the doors in the Premises. If an emergency necessitates immediate access to the Premises, Landlord may use whatever force is necessary to enter the Premises, and any such entry to the Premises shall not constitute a forcible or unlawful entry to the Premises, a detainer of the Premises, or an eviction of Tenant from the Premises or any portion thereof.

15. Quiet Enjoyment

. Landlord covenants that, so long as no Default (as hereinafter defined) has occurred, Tenant may peacefully and quietly have, hold and enjoy the Premises, free from any claim by Landlord or persons claiming under Landlord, but subject to all of the terms and provisions hereof, provisions of Applicable Laws and rights of record to which this Lease is or may become subordinate. This covenant is in lieu of any other quiet enjoyment covenant, either express or implied.

16. Utilities and Services.

16.1. Tenant shall pay for all water (including the cost to service, repair and replace reverse osmosis, de-ionized and other treated water), gas, heat, light, power, telephone, internet service, cable television, other telecommunications and other utilities supplied to the Premises, together with any fees, surcharges and taxes thereon. Power shall be separately sub-metered to Tenant. If any such utility is not separately metered or sub-metered to Tenant, Tenant shall pay Tenant's Adjusted Share of all charges of such utility jointly metered with other premises as part of Tenant's Adjusted Share of Operating Expenses or, in the alternative, Landlord may, at its option, monitor the usage of such utilities by Tenant and charge Tenant with the cost of purchasing, installing and monitoring such metering equipment, which cost shall be paid by Tenant as Additional Rent. Landlord may base its bills for utilities on reasonable estimates; provided that Landlord adjusts such billings promptly thereafter or as part of the next Landlord's Statement to reflect the actual cost of providing utilities to the Premises. To the extent that Tenant uses more than Tenant's Pro Rata Share of any utilities, then Tenant shall pay Landlord for Tenant's Adjusted Share of such utilities to reflect such excess. In the event that the Building or Project is less than fully occupied during a calendar year, Tenant acknowledges that Landlord may extrapolate utility usage that varies depending on the occupancy of the Building or Project (as applicable) to equal Landlord's reasonable estimate of what such utility usage would have been had the Building or Project, as applicable, been ninety-five percent (95%) occupied during such calendar year; provided, however, that Landlord shall not recover more than one hundred percent (100%) of the cost of such utilities. Tenant shall not be liable for the cost of utilities supplied to the Premises attributable to the time period prior to the Term Commencement Date; provided, however, that, if Landlord shall permit Tenant possession of the Premises prior to the Term Commencement Date and Tenant uses the Premises for any purpose other than placement of personal property as set forth in Section 4.3, then Tenant shall be responsible for the cost of utilities supplied to the Premises from such earlier date of possession.

16.2. Landlord shall not be liable for, nor shall any eviction of Tenant result from, the failure to furnish any utility or service, whether or not such failure is caused by accidents; breakage; casualties (to the extent not caused by the party claiming Force Majeure); Severe Weather Conditions (as defined below); physical natural disasters (but excluding weather conditions that are not Severe Weather Conditions); strikes, lockouts or other labor disturbances or labor disputes (other than labor disturbances and labor disputes resulting solely from the acts or omissions of the party claiming Force Majeure); acts of terrorism; riots or civil disturbances; wars or insurrections; shortages of materials (which shortages are not unique to the party claiming Force Majeure); government regulations, moratoria or other governmental actions, inactions or delays; failures to grant consent or delays in granting consent by any Lender whose consent is required under any applicable Loan Document; failures by third parties to deliver gas, oil or another suitable fuel supply, or inability of the party claiming Force Majeure, by exercise of reasonable diligence, to obtain gas, oil or another suitable fuel; or other causes beyond the reasonable control of the party claiming that Force Majeure has occurred (collectively, "Force Majeure "); or, to the extent permitted by Applicable Laws, Landlord's negligence. In the event of such failure, Tenant shall not be entitled to termination of this Lease or any abatement or reduction of Rent, nor shall Tenant be relieved from the operation of any covenant or agreement

of this Lease. "Severe Weather Conditions" means weather conditions that are materially worse than those that reasonably would be anticipated for the Property at the applicable time based on historic meteorological records. Notwithstanding anything to the contrary in this Lease, if, for more than five (5) consecutive business days following written notice to Landlord and as a direct result of Landlord's gross negligence or willful misconduct (and except to the extent that such failure is caused in whole or in part by the action or inaction of a Tenant Party (as defined below)), the provision of HVAC or other utilities to all or a material portion of the Premises that Landlord must provide pursuant to this Lease is interrupted (a "Material Services Failure"), then Tenant's Base Rent and Operating Expenses (or, to the extent that less than all of the Premises are affected, a proportionate amount (based on the Rentable Area of the Premises that is rendered unusable) of Base Rent and Operating Expenses) shall thereafter be abated until the Premises are again usable by Tenant for the Permitted Use; provided, however, that, if Landlord is diligently pursuing the restoration of such HVAC and other utilities and Landlord provides substitute HVAC and other utilities reasonably suitable for Tenant's continued use and occupancy of the Premises for the Permitted Use (e.g., supplying potable water or portable air conditioning equipment), then neither Base Rent nor Operating Expenses shall be abated. During any Material Services Failure, Tenant will cooperate with Landlord to arrange for the provision of any interrupted utility services on an interim basis via temporary measures until final corrective measures can be accomplished, and Tenant will permit Landlord the necessary access to the Premises to remedy such Material Service Failure. In the event of any interruption of HVAC or other utilities that Landlord must provide pursuant to this Lease, regardless of the cause, Landlord shall diligently pursue the restoration of such HVAC and other utilities. Notwithstanding anything in this Lease to the contrary, but subject to Article 24 (which shall govern in the event of a casualty), the provisions of this Section shall be Tenant's sole recourse and remedy in the event of an interruption of HVAC or other utilities to the Premises, including related to Section 16.8.

16.3. Tenant shall pay for, prior to delinquency of payment therefor, any utilities and services that may be furnished to the Premises during or, if Tenant occupies the Premises after the expiration or earlier termination of the Term, after the Term, beyond those utilities provided by Landlord, including telephone, internet service, cable television and other telecommunications, together with any fees, surcharges and taxes thereon. Upon Landlord's demand, utilities and services provided to the Premises that are separately metered shall be paid by Tenant directly to the supplier of such utilities or services.

16.4. Tenant shall not, without Landlord's prior written consent, use any device in the Premises (including data processing machines) that will in any way (a) increase the amount of ventilation, air exchange, gas, steam, electricity or water required or consumed in the Premises based upon Tenant's Pro Rata Share of the Building or Project (as applicable) beyond the existing capacity of the Building or the Project usually furnished or supplied for the Permitted Use or (b) exceed Tenant's Pro Rata Share of the Building's or Project's (as applicable) capacity to provide such utilities or services.

16.5. If Tenant shall require utilities or services in excess of those usually furnished or supplied for tenants in similar spaces in the Building or the Project by reason of Tenant's

equipment or extended hours of business operations, then Tenant shall first procure Landlord's consent for the use thereof, which consent Landlord may condition upon the availability of such excess utilities or services, and Tenant shall pay as Additional Rent an amount equal to the cost of providing such excess utilities and services.

16.6. Landlord shall provide water in the Common Area for lavatory and landscaping purposes only, which water shall be from the local municipal or similar source; provided, however, that if Landlord determines that Tenant requires, uses or consumes water provided to the Common Area for any purpose other than ordinary lavatory purposes, Landlord may install a water meter ("Tenant Water Meter") and thereby measure Tenant's water consumption for all purposes. Tenant shall pay Landlord for the costs of any Tenant Water Meter and the installation and maintenance thereof during the Term. If Landlord installs a Tenant Water Meter, Tenant shall pay for water consumed by Tenant, as shown on such meter, as and when bills are rendered. If Tenant fails to timely make such payments, Landlord may pay such charges and collect the same from Tenant. Any such costs or expenses incurred or payments made by Landlord for any of the reasons or purposes stated in this Section shall be deemed to be Additional Rent payable by Tenant and collectible by Landlord as such.

16.7. Landlord reserves the right to stop service of the elevator, plumbing, ventilation, air conditioning and utility systems, when Landlord reasonably deems necessary or desirable, due to accident, emergency or the need to make repairs, alterations or improvements, until such repairs, alterations or improvements shall have been completed, and, except as provided in Section 16.2, Landlord shall further have no responsibility or liability for failure to supply elevator facilities, plumbing, ventilation, air conditioning or utility service when prevented from doing so by Force Majeure or, to the extent permitted by Applicable Laws, Landlord's negligence. Without limiting the foregoing, it is expressly understood and agreed that any covenants on Landlord's part to furnish any service pursuant to any of the terms, covenants, conditions, provisions or agreements of this Lease, or to perform any act or thing for the benefit of Tenant, shall not be deemed breached if Landlord is unable to furnish or perform the same by virtue of Force Majeure or, to the extent permitted by Applicable Laws, Landlord's negligence.

16.8. For the Premises, Landlord shall (a) maintain and operate the HVAC systems used for the Permitted Use only ("Base HVAC") and (b) furnish HVAC as reasonably required (except as this Lease otherwise provides or as to any special requirements that arise from Tenant's particular use of the Premises) for reasonably comfortable occupancy of the Premises twenty-four (24) hours a day, every day during the Term, subject to casualty, eminent domain or as otherwise specified in this Article; provided that Tenant complies with the next sentence. If Tenant will require Base HVAC outside normal business hours of business days (as reasonably designated by Landlord) in the Premises ("Overtime HVAC"), then Landlord shall be obligated to provide Overtime HVAC only if Tenant requests it by 4 p.m. on the immediately preceding business day. To the extent that Tenant occupies the Premises for laboratory purposes, Tenant directs Landlord to provide Overtime HVAC at all times outside normal business hours of business days (as reasonably designated by Landlord), pending further written notice from Tenant. Tenant shall pay Landlord, as Additional Rent, one hundred percent (100%) of Landlord's actual total cost of delivering steam and chilled water for Overtime HVAC for the

Premises, as well as for HVAC provided during Tenant's business hours. Notwithstanding anything to the contrary in this Section, Landlord shall have no liability, and Tenant shall have no right or remedy, on account of any interruption or impairment in HVAC services except as provided in Section 16.2.

16.9. For any utilities serving the Premises for which Tenant is billed directly by such utility provider, Tenant agrees to furnish to Landlord (a) any invoices or statements for such utilities within thirty (30) days after Tenant's receipt thereof, (b) within thirty (30) days after Landlord's request, any other utility usage information reasonably requested by Landlord, and (c) within thirty (30) days after each calendar year during the Term, authorization to allow Landlord to access Tenant's usage information necessary for Landlord to complete an ENERGY STAR® Statement of Performance (or similar comprehensive utility usage report (e.g., related to Labs 21), if requested by Landlord) and any other information in Tenant's possession reasonably requested by Landlord for the immediately preceding year; and Tenant shall comply with any other energy usage or consumption requirements required by Applicable Laws. Tenant shall retain records of utility usage at the Premises, including invoices and statements from the utility provider, for at least sixty (60) months, or such other period of time as may be requested by Landlord. Tenant acknowledges that any utility information for the Premises, the Building and the Project may be shared with third parties, including Landlord's consultants and Governmental Authorities. In the event that Tenant fails to comply with this Section, Tenant hereby authorizes Landlord to collect utility usage information directly from the applicable utility providers, and Tenant shall pay Landlord a fee of One Thousand Dollars ($1,000) per month to collect such utility usage information. In addition to the foregoing, Tenant shall comply with all Applicable Laws related to the disclosure and tracking of energy consumption at the Premises. The provisions of this Section shall survive the expiration or earlier termination of this Lease.

16.10. Tenant, at its sole cost and expense, and subject to the terms and provisions of Article 17 of this Lease, may install a separate acid neutralization tank (the "Acid Neutralization Tank") in the portion of the Premises located on the first floor of the Building, as shown on Exhibit A. In connection with the installation of the Acid Neutralization Tank, Tenant may connect to the Building's common laboratory waste sanitary sewer connection and to the municipal sewer line in the street adjacent to the Building. Tenant, at its sole cost and expense, shall be responsible for obtaining, and complying with at all times, the MWRA Permit and any other permits and approvals from Governmental Authorities necessary to install, use or operate the Acid Neutralization Tank, and Tenant may not operate the Acid Neutralization Tank without first having provided to Landlord, for Landlord's approval, copies of all such permits and approvals. Tenant shall be responsible for all costs, charges and expenses in connection with or arising out of the operation, use, maintenance, repair or refurbishment of the Acid Neutralization Tank, including all clean-up costs relating to the Acid Neutralization Tank. Tenant shall Indemnify the Landlord Indemnitees from and against any and all Claims, including (a) diminution in value of the Project or any portion thereof, (b) damages for the loss or restriction on use of rentable or usable space or of any amenity of the Project, (c) damages arising from any adverse impact on marketing of space in the Project or any portion thereof and (d) sums paid in settlement of Claims that arise during or after the Term as a result of Tenant's improper use of the Acid Neutralization Tank. This Indemnification by Tenant includes costs incurred in

connection with any investigation of site conditions or any clean-up, remediation, removal or restoration required by any Governmental Authority arising from Tenant's use of the Acid Neutralization Tank.

16.11. Subject to each and every term and provision of this Lease (including reasonable closures for repairs or maintenance pursuant to the terms of this Lease), and subject to reasonable closures as the result of casualty, condemnation, emergencies or other circumstances beyond Landlord's control, Tenant shall have the right to access the Premises twenty-four (24) hours per day, seven (7) days per week.

17. Alterations.

17.1. Tenant shall make no alterations, additions or improvements in or to the Premises or engage in any construction, demolition, reconstruction, renovation or other work (whether major or minor) of any kind in, at or serving the Premises ("Alterations") without Landlord's prior written approval, which approval may be subject to the consent of one or more Lenders, if required under any applicable Loan Document, but which approval Landlord shall not otherwise unreasonably withhold; provided, however, that, in the event any proposed Alteration affects (a) any structural portions of the Building, including exterior walls, the roof, the foundation or slab, foundation or slab systems (including barriers and subslab systems) or the core of the Building, (b) the exterior of the Building or (c) any Building systems, including elevator, plumbing, HVAC, electrical, security, life safety and power, then Landlord may withhold its approval in its sole and absolute discretion. Tenant shall, in making any Alterations, use only those architects, contractors, suppliers and mechanics of which Landlord has given prior written approval, which approval shall be in Landlord's reasonable discretion. In seeking Landlord's approval, Tenant shall provide Landlord, at least thirty (30) days in advance of the proposed construction, with plans, specifications, bid proposals, certified stamped engineering drawings and calculations by Tenant's engineer of record or architect of record (including connections to the Building's structural system, modifications to the Building's envelope, non-structural penetrations in slabs or walls, and modifications or tie-ins to life safety systems), work contracts, requests for laydown areas and such other information concerning the nature and cost of the Alterations as Landlord may reasonably request, provided that Tenant shall not commence any such Alterations that require Landlord's consent unless and until Tenant has received the written approval of Landlord and any and all Lenders whose consent is required under any applicable Loan Document. In no event shall Tenant use or Landlord be required to approve any architects, consultants, contractors, subcontractors or material suppliers that Landlord reasonably believes could cause labor disharmony or may not have sufficient experience, in Landlord's reasonable opinion, to perform work in an occupied Class "A" laboratory research building and in tenant-occupied lab areas. Notwithstanding the foregoing, Tenant may make strictly cosmetic changes to the Premises that do not require any permits or more than three (3) total contractors and subcontractors ("Cosmetic Alterations") without Landlord's consent; provided that (y) the cost of any Cosmetic Alterations does not exceed Eighty-Five Thousand Dollars ($85,000.00) in any one instance or Three Hundred Fifty Thousand Dollars ($350,000.00) annually, (z) such Cosmetic Alterations do not (i) require any structural or other substantial modifications to the Premises, (ii) require any changes to or adversely affect the Building systems, (iii) affect the exterior of the

Building, or (iv) trigger any requirement under Applicable Laws that would require Landlord to make any alteration or improvement to the Premises, the Building or the Project. Tenant shall give Landlord at least ten (10) days' prior written notice of any Cosmetic Alterations. Notwithstanding anything in this Article 17 to the contrary, the installation of the Acid Neutralization Tank shall not be deemed a Cosmetic Alteration, irrespective of cost.

17.2. Tenant shall not construct or permit to be constructed partitions or other obstructions that might interfere with free access to mechanical installation or service facilities of the Building or with other tenants' components located within the Building, or interfere with the moving of Landlord's equipment to or from the enclosures containing such installations or facilities.

17.3. Tenant shall accomplish any work performed on the Premises or the Building in such a manner as to permit any life safety systems to remain fully operable at all times.

17.4. Any work performed on the Premises, the Building or the Project by Tenant or Tenant's contractors shall be done at such times and in such manner as Landlord may from time to time designate. Tenant covenants and agrees that all work done by Tenant or Tenant's contractors shall be performed in full compliance with Applicable Laws. Within thirty (30) days after completion of any Alterations (other than Cosmetic Alterations, unless requested by Landlord), Tenant shall provide Landlord with complete "as built" drawing print sets and electronic CADD files on disc (or files in such other current format in common use as Landlord reasonably approves or requires) showing any changes in the Premises, as well as a commissioning report prepared by a licensed, qualified commissioning agent hired by Tenant and reasonably approved by Landlord for all new or affected mechanical, electrical and plumbing systems. Any such "as built" plans shall show the applicable Alterations as an overlay on the Building as-built plans; provided that Landlord provides the Building "as built" plans to Tenant.

17.5. Before commencing any Alterations, Tenant shall (a) give Landlord at least twenty (20) days' prior written notice of the proposed commencement of such work and the names and addresses of the persons supply labor or materials therefor so that Landlord may enter the Premises to post and keep posted thereon and therein notices or to take any further action that Landlord may reasonably deem proper for the protection of Landlord's interest in the Project and (b) shall, if required by Landlord, secure, at Tenant's own cost and expense, a completion and lien indemnity bond satisfactory to Landlord for such work.

17.6. Tenant shall repair any damage to the Premises arising from Tenant's removal of any property from the Premises. During any such restoration period, Tenant shall pay Rent to Landlord as provided herein as if such space were otherwise occupied by Tenant. The provisions of this Section shall survive the expiration or earlier termination of this Lease.

17.7. The Premises plus any Alterations; Signage; Tenant Improvements; attached equipment, decorations, fixtures and trade fixtures; movable laboratory casework and related appliances; and other additions and improvements attached to or built into the Premises made by either of the parties (including all floor and wall coverings; paneling; sinks and related plumbing fixtures; laboratory benches; exterior venting fume hoods; walk-in freezers and refrigerators;

ductwork; conduits; electrical panels and circuits; attached machinery and equipment; and built-in furniture and cabinets, in each case, together with all additions and accessories thereto), shall (unless, prior to such construction or installation, or in connection with Landlord's consent thereto, Landlord elects otherwise in writing) at all times remain the property of Landlord, shall remain in the Premises and shall (unless, prior to construction or installation thereof, Landlord elects otherwise in writing) be surrendered to Landlord upon the expiration or earlier termination of this Lease. For the avoidance of doubt, the items listed on Exhibit H attached hereto (which Exhibit H may be updated by Tenant from and after the Term Commencement Date, subject to Landlord's reasonable written consent) constitute Tenant's property and shall be removed by Tenant upon the expiration or earlier termination of the Lease.

17.8. Notwithstanding any other provision of this Article to the contrary, in no event shall Tenant remove any improvement from the Premises in which any Lender has a security interest or as to which Landlord contributed payment, including the Tenant Improvements, without Landlord's prior written consent, which consent Landlord may withhold in its sole and absolute discretion.

17.9. If Tenant shall fail to remove any of its property from the Premises prior to the expiration or earlier termination of this Lease, then Landlord may, at its option, remove the same in any manner that Landlord shall choose and store such effects without liability to Tenant for loss thereof or damage thereto, and Tenant shall pay Landlord, upon demand, any costs and expenses incurred due to such removal and storage or Landlord may, at its sole option and without notice to Tenant, sell such property or any portion thereof at private sale and without legal process for such price as Landlord may obtain and apply the proceeds of such sale against any (a) amounts due by Tenant to Landlord under this Lease and (b) any actual and reasonable expenses incident to the removal, storage and sale of such personal property.

17.10. Except with respect to Cosmetic Alterations, Tenant shall pay to Landlord (upon demand) any out-of-pocket third party costs incurred by Landlord for professional review of any plans or specifications for Alterations that require Landlord's consent. Tenant shall reimburse Landlord for any extra expenses incurred by Landlord by reason of faulty work done by Tenant or its contractors, or by reason of delays caused by such work (other than to the extent such delays were caused by Landlord), or by reason of inadequate clean-up.

17.11. Within sixty (60) days after final completion of any Alterations performed by Tenant with respect to the Premises, Tenant shall submit to Landlord documentation showing the amounts expended by Tenant with respect to such Alterations, together with supporting documentation reasonably acceptable to Landlord.

17.12. Tenant shall take, and shall cause its contractors to take, commercially reasonable steps to protect the Premises during the performance of any Alterations, including covering or temporarily removing any window coverings so as to guard against dust, debris or damage.

17.13. Tenant shall require its contractors and subcontractors performing work on the Premises to name Landlord and its affiliates and Lenders as additional insureds on their respective insurance policies.

17.14. Notwithstanding anything to the contrary in this Lease, Landlord and Tenant agree that Landlord shall be permitted to withhold its approval (in its sole and absolute discretion) of any Alteration that converts (office to lab or lab to office, as applicable) the office and lab zones identified on Exhibit A-1 attached hereto.

18. Repairs and Maintenance.

18.1. Landlord shall repair and maintain the structural and exterior portions and Common Area of the Building and the Project, including roofing and covering materials; foundations (excluding any architectural slabs, but including any structural slabs); exterior walls; plumbing; fire sprinkler systems (if any); base Building HVAC systems; the HVAC system located within the Premises up to the first damper or isolation valve that serves the Premises (for purposes of clarity, the portion of the HVAC system that includes such first damper or isolation valve and extends into and through the Premises, including any distribution systems and any supplemental HVAC serving the Premises shall be Tenant's obligation to maintain and repair pursuant to Section 18.2 hereof); elevators; and base Building electrical systems installed or furnished by Landlord.

18.2. Except for services of Landlord, if any, required by Section 18.1, Tenant shall at Tenant's sole cost and expense maintain and keep the Premises (including but not limited to any systems or equipment exclusively serving the Premises, but excluding the base Building HVAC systems up to the first damper or isolation valve that extends into and serves the Premises) and every part thereof in good condition and repair, damage thereto from ordinary wear and tear excepted, and shall, within ten (10) business days after receipt of written notice from Landlord, provide to Landlord any maintenance records that Landlord reasonably requests. Tenant shall, upon the expiration or sooner termination of the Term, surrender the Premises to Landlord in as good a condition as existed when the Tenant Improvements are finally completed by Landlord, and with respect to Alterations, in substantially the same condition as existed on the date such Alterations are substantially completed by Tenant, ordinary wear and tear excepted. Landlord shall have no obligation to alter, remodel, improve, repair, decorate or paint the Premises or any part thereof, other than pursuant to the terms and provisions of the Work Letter.

18.3. Landlord shall not be liable for any failure to make any repairs or to perform any maintenance that is Landlord's obligation pursuant to this Lease unless such failure shall persist for an unreasonable time after Tenant provides Landlord with written notice of the need of such repairs or maintenance. Except as otherwise set forth in Section 31.12, Tenant waives its rights under Applicable Laws now or hereafter in effect to make repairs at Landlord's expense.

18.4. If any excavation shall be made upon land adjacent to or under the Building, or shall be authorized to be made, Tenant shall afford to the person causing or authorized to cause such excavation, license to enter the Premises for the purpose of performing such work as such person shall deem necessary or desirable to preserve and protect the Building from injury or damage and to support the same by proper foundations, without any claim for damages or liability against Landlord and without reducing or otherwise affecting Tenant's obligations under this Lease.

18.5. This Article relates to repairs and maintenance arising in the ordinary course of operation of the Building and the Project. In the event of a casualty described in Article 24, Article 24 shall apply in lieu of this Article. In the event of eminent domain, Article 25 shall apply in lieu of this Article.

18.6. Costs incurred by Landlord pursuant to this Article shall constitute Operating Expenses, subject to the limitations on inclusion of certain costs associated with capital expenditures, as set forth in Section 9.1(c).

19. Liens.

19.1. Subject to the immediately succeeding sentence, Tenant shall keep the Premises, the Building and the Project free from any liens arising out of work or services performed, materials furnished to or obligations incurred by Tenant. Tenant further covenants and agrees that any mechanic's or materialman's lien filed against the Premises, the Building or the Project for work or services claimed to have been done for, or materials claimed to have been furnished to, or obligations incurred by Tenant shall be discharged or bonded by Tenant within ten (10) days after the filing thereof, at Tenant's sole cost and expense.

19.2. Should Tenant fail to discharge or bond against any lien of the nature described in Section 19.1, Landlord may, at Landlord's election, pay such claim or post a statutory lien bond or otherwise provide security to eliminate the lien as a claim against title, and Tenant shall immediately reimburse Landlord for the actual costs thereof as Additional Rent. Tenant shall Indemnify the Landlord Indemnitees from and against any Claims arising from any such liens, including any administrative, court or other legal proceedings related to such liens.

19.3. In the event that Tenant leases or finances the acquisition of office equipment, furnishings or other personal property of a removable nature utilized by Tenant in the operation of Tenant's business, Tenant warrants that any Uniform Commercial Code financing statement shall, upon its face or by exhibit thereto, indicate that such financing statement is applicable only to removable personal property of Tenant located within the Premises. In no event shall the address of the Premises, the Building or the Project be furnished on a financing statement without qualifying language as to applicability of the lien only to removable personal property located in an identified suite leased by Tenant. Should any holder of a financing statement record or place of record a financing statement that appears to constitute a lien against any interest of Landlord or against equipment that may be located other than within an identified suite leased by Tenant, Tenant shall, within ten (10) days after filing such financing statement, cause (a) a copy of the lender security agreement or other documents to which the financing statement pertains to be furnished to Landlord to facilitate Landlord's ability to demonstrate that the lien of such financing statement is not applicable to Landlord's interest and (b) Tenant's lender to amend such financing statement and any other documents of record to clarify that any liens imposed thereby are not applicable to any interest of Landlord in the Premises, the Building or the Project. If requested by Tenant or its lender, Landlord will agree to deliver a written statement to such lender providing that this Lease does not grant to Landlord a security interest in Tenant's personal property.

20. Estoppel Certificate. Tenant shall, within ten (10) business days after receipt of written notice from Landlord, execute, acknowledge and deliver a statement in writing substantially in the form attached to this Lease as Exhibit I, or on any other form reasonably requested by a current or proposed Lender or encumbrancer or proposed purchaser, (a) certifying that this Lease is unmodified and in full force and effect (or, if modified, stating the nature of such modification and certifying that this Lease as so modified is in full force and effect) and the dates to which rental and other charges are paid in advance, if any, (b) acknowledging that there are not, to Tenant's knowledge, any uncured defaults on the part of Landlord hereunder, or specifying such defaults if any are claimed, and (c) setting forth such further information with respect to this Lease or the Premises as may be reasonably requested thereon. Any such statements may be relied upon by any prospective purchaser or encumbrancer of all or any portion of the Property. Tenant's failure to deliver any such statement within the prescribed time shall, at Landlord's option, constitute a Default (as defined below) under this Lease, and, in any event, shall be binding upon Tenant that the Lease is in full force and effect and without modification except as may be represented by Landlord in any certificate prepared by Landlord and delivered to Tenant for execution.

21. Hazardous Materials.

21.1. Tenant shall not cause or permit any Hazardous Materials (as defined below) to be brought upon, kept or used in or about the Premises, the Building or the Project in violation of Applicable Laws by Tenant or any of its employees, agents, contractors or invitees (collectively with Tenant, each a "Tenant Party"). If (a) Tenant breaches such obligation, (b) the presence of Hazardous Materials as a result of such a breach results in contamination of the Project, any portion thereof, or any adjacent property, (c) contamination of the Premises otherwise occurs during the Term or any extension or renewal hereof or holding over hereunder (other than if such contamination results from (i) migration of Hazardous Materials from outside the Premises not caused by a Tenant Party or (ii) to the extent such contamination is caused by Landlord's gross negligence or willful misconduct) or (d) contamination of the Project occurs as a result of Hazardous Materials that are placed on or under or are released into the Project by a Tenant Party, then Tenant shall Indemnify the Landlord Indemnitees from and against any and all Claims of any kind or nature, including (w) diminution in value of the Project or any portion thereof, (x) damages for the loss or restriction on use of rentable or usable space or of any amenity of the Project, (y) damages arising from any adverse impact on marketing of space in the Project or any portion thereof and (z) sums paid in settlement of Claims that arise before, during or after the Term as a result of such breach or contamination. This Indemnification by Tenant includes costs incurred in connection with any investigation of site conditions or any clean-up, remedial, removal or restoration work required by any Governmental Authority because of Hazardous Materials present in the air, soil or groundwater above, on, under or about the Project. Without limiting the foregoing, if the presence of any Hazardous Materials in, on, under or about the Project, any portion thereof or any adjacent property caused or permitted by any Tenant Party results in any contamination of the Project, any portion thereof or any adjacent property, then Tenant shall promptly take all actions at its sole cost and expense as are necessary to return the Project, any portion thereof or any adjacent property to its respective condition existing prior to the time of such contamination; provided that Landlord's written approval of such action shall

first be obtained, which approval Landlord shall not unreasonably withhold or delay; and provided, further, that it shall be reasonable for Landlord to withhold its consent if such actions could have a material adverse long-term or short-term effect on the Project, any portion thereof or any adjacent property. Tenant's obligations under this Section shall not be affected, reduced or limited by any limitation on the amount or type of damages, compensation or benefits payable by or for Tenant under workers' compensation acts, disability benefit acts, employee benefit acts or similar legislation.

21.2. Landlord acknowledges that it is not the intent of this Article to prohibit Tenant from operating its business for the Permitted Use. Tenant may operate its business according to the custom of Tenant's industry so long as the use or presence of Hazardous Materials is strictly and properly monitored in accordance with Applicable Laws. As a material inducement to Landlord to allow Tenant to use Hazardous Materials in connection with its business, Tenant agrees to deliver to Landlord (a) a list identifying each type of Hazardous Material to be present at the Premises that is subject to regulation under any environmental Applicable Laws in the form of a Tier II form pursuant to Section 312 of the Emergency Planning and Community Right-to-Know Act of 1986 (or any successor statute) or any other form reasonably requested by Landlord, (b) a list of any and all approvals or permits from Governmental Authorities required in connection with the presence of such Hazardous Material at the Premises and (c) correct and complete copies of (i) notices of violations of Applicable Laws related to Hazardous Materials and (ii) plans relating to the installation of any storage tanks to be installed in, on, under or about the Project (provided that installation of storage tanks shall only be permitted after Landlord has given Tenant its written consent to do so, which consent Landlord may withhold in its sole and absolute discretion) and closure plans or any other documents required by any and all Governmental Authorities for any storage tanks installed in, on, under or about the Project for the closure of any such storage tanks (collectively, "Hazardous Materials Documents"). Tenant shall deliver to Landlord updated Hazardous Materials Documents, within fourteen (14) days after receipt of a written request therefor from Landlord, not more often than once per year, unless (m) there are any changes to the Hazardous Materials Documents or (n) Tenant initiates any Alterations or changes its business, in either case in a way that involves any material increase in the types or amounts of Hazardous Materials, in which case Tenant shall deliver updated Hazardous Materials documents (without Landlord having to request them) before or, if not practicable to do so before, as soon as reasonably practicable after the occurrence of the events in Subsection 21.2(m) or (n). For each type of Hazardous Material listed, the Hazardous Materials Documents shall include (t) the chemical name, (u) the material state (e.g., solid, liquid, gas or cryogen), (v) the concentration, (w) the storage amount and storage condition (e.g., in cabinets or not in cabinets), (x) the use amount and use condition (e.g., open use or closed use), (y) the location (e.g., room number or other identification) and (z) if known, the chemical abstract service number. Notwithstanding anything in this Section to the contrary, Tenant shall not be required to provide Landlord with any documents containing information of a proprietary nature, unless such documents contain a reference to Hazardous Materials or activities related to Hazardous Materials. Landlord may, at Landlord's expense, cause the Hazardous Materials Documents to be reviewed by a person or firm qualified to analyze Hazardous Materials to confirm compliance with the provisions of this Lease and with Applicable Laws. In the event that a review of the Hazardous Materials Documents indicates non-compliance with this Lease or

Applicable Laws, Tenant shall, at its expense, diligently take steps to bring its storage and use of Hazardous Materials into compliance. Notwithstanding anything in this Lease to the contrary or Landlord's review into Tenant's Hazardous Materials Documents or use or disposal of hazardous materials, however, Landlord shall not have and expressly disclaims any liability related to Tenant's or other tenants' use or disposal of Hazardous Materials, it being acknowledged by Tenant that Tenant is best suited to evaluate the safety and efficacy of its Hazardous Materials usage and procedures.

21.3. Tenant represents and warrants to Landlord that is not nor has it been, in connection with the use, disposal or storage of Hazardous Materials, (a) subject to a material enforcement order issued by any Governmental Authority or (b) required to take any remedial action.

21.4. At any time, and from time to time, prior to the expiration of the Term, Landlord shall have the right to conduct appropriate tests of the Project or any portion thereof to demonstrate that Hazardous Materials are present or that contamination has occurred due to the acts or omissions of a Tenant Party. Tenant shall pay all reasonable costs of such tests if such tests reveal that Hazardous Materials exist at the Project in violation of this Lease.

21.5. If underground or other storage tanks storing Hazardous Materials installed or utilized by Tenant are located on the Premises, or are hereafter placed on the Premises by Tenant (or by any other party, if such storage tanks are utilized by Tenant), then Tenant shall monitor the storage tanks, maintain appropriate records, implement reporting procedures, properly close any underground storage tanks, and take or cause to be taken all other steps necessary or required under the Applicable Laws. Tenant shall have no responsibility or liability for underground or other storage tanks installed by anyone other than Tenant unless Tenant utilizes such tanks, in which case Tenant's responsibility for such tanks shall be as set forth in this Section.

21.6. Tenant shall promptly report to Landlord any actual or suspected presence of mold or water intrusion at the Premises.

21.7. Tenant's obligations under this Article shall survive the expiration or earlier termination of the Lease. During any period of time needed by Tenant or Landlord after the termination of this Lease to complete the removal from the Premises of any such Hazardous Materials for which Tenant is responsible under this Lease, Tenant shall be deemed a holdover tenant and subject to the provisions of Article 27.

21.8. As used herein, the term "Hazardous Material" means any toxic, explosive, corrosive, flammable, infectious, radioactive, carcinogenic, mutagenic or otherwise hazardous substance, material or waste that is or becomes regulated by Applicable Laws or any Governmental Authority.

21.9. Notwithstanding anything to the contrary in this Lease, Landlord shall have sole control over the equitable allocation of fire control areas (as defined in the Uniform Building Code as adopted by the city or municipality(ies) in which the Project is located (the "UBC")) within the Project for the storage of Hazardous Materials. Notwithstanding anything to the

contrary in this Lease, the quantity of Hazardous Materials allowed by this Section is specific to Tenant and shall not run with the Lease in the event of a Transfer (as defined in Article 29). In the event of a Transfer, if the use of Hazardous Materials by such new tenant ("New Tenant") is such that New Tenant utilizes fire control areas in the Project in excess of New Tenant's Pro Rata Share of the Building or the Project, as applicable, then New Tenant shall, at its sole cost and expense and upon Landlord's written request, establish and maintain a separate area of the Premises classified by the UBC as an "H" occupancy area for the use and storage of Hazardous Materials, or take such other action as is necessary to ensure that its share of the fire control areas of the Building and the Project is not greater than New Tenant's Pro Rata Share of the Building or the Project, as applicable. Notwithstanding anything in this Lease to the contrary, Landlord shall not have and expressly disclaims any liability related to Tenant's or other tenants' use or disposal of fire control areas, it being acknowledged by Tenant that Tenant and other tenants are best suited to evaluate the safety and efficacy of its Hazardous Materials usage and procedures.

22. Odors and Exhaust. Tenant acknowledges that Landlord would not enter into this Lease with Tenant unless Tenant assured Landlord that under no circumstances will any other occupants of the Building or the Project (including persons legally present in any outdoor areas of the Project) be subjected to odors or fumes (whether or not noxious), and that the Building and the Project will not be damaged by any exhaust, in each case from Tenant's operations. Landlord and Tenant therefore agree as follows:

22.1. Tenant shall not cause or permit (or conduct any activities that would cause) any release of any odors or fumes of any kind from the Premises.

22.2. If the Building has a ventilation system that, in Landlord's judgment, is adequate, suitable, and appropriate to vent the Premises in a manner that does not release odors affecting any indoor or outdoor part of the Project, Tenant shall vent the Premises through such system. If Landlord at any time determines that any existing ventilation system is inadequate, or if no ventilation system exists, Tenant shall, in compliance with Applicable Laws, vent all fumes and odors from the Premises (and remove odors from Tenant's exhaust stream) as Landlord requires. The placement and configuration of all ventilation exhaust pipes, louvers and other equipment shall be subject to Landlord's approval. Tenant acknowledges Landlord's legitimate desire to maintain the Project (indoor and outdoor areas) in an odor-free manner, and Landlord may require Tenant, consistent with Landlord's non-discriminatory requirements for the Building, to abate and remove all odors in a manner that goes beyond the requirements of Applicable Laws.

22.3. Tenant shall, at Tenant's sole cost and expense, provide odor eliminators and other devices (such as filters, air cleaners, scrubbers and whatever other equipment may in Landlord's judgment be necessary or appropriate from time to time) to completely remove, eliminate and abate any odors, fumes or other substances in Tenant's exhaust stream that, in Landlord's judgment, emanate from Tenant's Premises. Any work Tenant performs under this Section shall constitute Alterations.

22.4. Tenant's responsibility to remove, eliminate and abate odors, fumes and exhaust shall continue throughout the Term. Landlord's construction of the Tenant Improvements shall not preclude Landlord from requiring additional measures to eliminate odors, fumes and other adverse impacts of Tenant's exhaust stream (as Landlord may reasonably designate in Landlord's discretion). Tenant shall install additional equipment as Landlord reasonably requires from time to time under the preceding sentence. Such installations shall constitute Alterations. Tenant shall have no obligation or liabilities for odors, fumes or exhaust arising or emanating from portions of the Project that are not the Premises unless arising from the actions or omissions of Tenant or another Tenant Party.

22.5. If Tenant fails to install satisfactory odor control equipment within ten (10) business days after Landlord's demand made at any time, then Landlord may, without limiting Landlord's other rights and remedies, require Tenant to cease and suspend any operations in the Premises that, in Landlord's reasonable determination, cause odors, fumes or exhaust. For the purpose of the immediately foregoing sentence, Landlord's determination shall be "reasonable" if Landlord has received a complaint regarding such odors, fumes or exhaust. For example, if Landlord determines that Tenant's production of a certain type of product causes odors, fumes or exhaust, and Tenant does not install satisfactory odor control equipment within ten (10) business days after Landlord's request, then Landlord may require Tenant to stop producing such type of product in the Premises unless and until Tenant has installed odor control equipment satisfactory to Landlord.

23. Insurance.

23.1. Landlord shall maintain insurance for the Building and the Project in amounts equal to full replacement cost (exclusive of the costs of excavation, foundations and footings, engineering costs or such other costs to the extent the same are not incurred in the event of a rebuild and without reference to depreciation taken by Landlord upon its books or tax returns) or such lesser coverage as Landlord may elect, provided that such coverage shall not be less than the amount of such insurance Landlord's Lender, if any, requires Landlord to maintain, providing protection against any peril generally included within the classification "Fire and Extended Coverage," together with insurance against sprinkler damage (if applicable), vandalism and malicious mischief. Landlord, subject to availability thereof, shall further insure, if Landlord deems it appropriate, coverage against flood, environmental hazard, earthquake, loss or failure of building equipment, rental loss during the period of repairs or rebuilding, Workers' Compensation insurance and fidelity bonds for employees employed to perform services. Notwithstanding the foregoing, Landlord may, but shall not be deemed required to, provide insurance for any improvements installed by Tenant or that are in addition to the standard improvements customarily furnished by Landlord, without regard to whether or not such are made a part of or are affixed to the Building.

23.2. In addition, Landlord shall carry Commercial General Liability insurance with combined single limits of not less than Five Million Dollars ($5,000,000) per occurrence/general aggregate for bodily injury (including death), or property damage with respect to the Project, written on an occurrence basis.

23.3. Tenant shall, at its own cost and expense, procure and maintain during the Term the following insurance for the benefit of Tenant and Landlord (as their interests may appear) with insurers financially acceptable and lawfully authorized to do business in the state where the Premises are located:

(a) Commercial General Liability insurance on a broad-based occurrence coverage form, with coverages including but not limited to bodily injury (including death), property damage (including loss of use resulting therefrom), premises/operations, personal & advertising injury, and contractual liability with limits of liability of not less than $2,000,000 for bodily injury and property damage per occurrence, $2,000,000 general aggregate, which limits may be met by use of excess and/or umbrella liability insurance provided that such coverage is at least as broad as the primary coverages required herein.

(b) Commercial Automobile Liability insurance covering liability arising from the use or operation of any auto, including those owned, hired or otherwise operated or used by or on behalf of the Tenant. The coverage shall be on a broad-based occurrence form with combined single limits of not less than $1,000,000 per accident for bodily injury and property damage.

(c) Commercial Property insurance covering property damage to the full replacement cost value and business interruption. Covered property shall include all tenant improvements in the Premises (to the extent not insured by Landlord pursuant to Section 23.1) and Tenant's Property including personal property, furniture, fixtures, machinery, equipment, stock, inventory and improvements and betterments, which may be owned by Tenant or Landlord and required to be insured hereunder, or which may be leased, rented, borrowed or in the care custody or control of Tenant, or Tenant's agents, employees or subcontractors. Such insurance, with respect only to all Tenant Improvements, Alterations or other work performed on the Premises by Tenant (collectively, "Tenant Work"), shall name Landlord and Landlord's current and future mortgagees as loss payees as their interests may appear. Such insurance shall be written on an "all risk" of physical loss or damage basis including the perils of fire, extended coverage, electrical injury, mechanical breakdown, windstorm, vandalism, malicious mischief, sprinkler leakage, back-up of sewers or drains, flood, earthquake, terrorism and such other risks Landlord may from time to time designate, for the full replacement cost value of the covered items with an agreed amount endorsement with no co-insurance. Business interruption coverage shall have limits sufficient to cover Tenant's lost profits and necessary continuing expenses, including rents due Landlord under the Lease. The minimum period of indemnity for business interruption coverage shall be twelve (12) months plus twelve (12) months' extended period of indemnity.

(d) Workers' Compensation insurance as is required by statute or law, or as may be available on a voluntary basis and Employers' Liability insurance with limits of not less than the following: each accident, Five Hundred Thousand Dollars ($500,000); disease ($500,000); disease (each employee), Five Hundred Thousand Dollars ($500,000).

(e) Medical malpractice insurance at limits of not less than $1,000,000 each claim during such periods, if any, that Tenant engages in the practice of medicine at the Premises or conducts clinical human trials at the Premises, or counsels or provides medical services to human patients at the Premises.

(f) Pollution Legal Liability insurance is required if Tenant stores, handles, generates or treats Hazardous Materials, as determined solely by Landlord, on or about the Premises. Such coverage shall include bodily injury, sickness, disease, death or mental anguish or shock sustained by any person; property damage including physical injury to or destruction of tangible property including the resulting loss of use thereof, clean-up costs, and the loss of use of tangible property that has not been physically injured or destroyed; and defense costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages. Coverage shall apply to both sudden and non-sudden pollution conditions including the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water. Claims-made coverage is permitted, provided the policy retroactive date is continuously maintained prior to the commencement date of this agreement, and coverage is continuously maintained during all periods in which Tenant occupies the Premises. Coverage shall be maintained with limits of not less than $1,000,000 per incident with a $2,000,000 policy aggregate and for a period of two (2) years thereafter.

(g) During all construction by Tenant at the Premises, with respect to tenant improvements being constructed (including the Tenant Improvements and any Alterations, insurance required in Exhibit B-1 must be in place.

23.4. The insurance required of Tenant by this Article shall be with companies at all times having a current rating of not less than A- and financial category rating of at least Class VII in "A.M. Best's Insurance Guide" current edition. Tenant shall obtain for Landlord from the insurance companies/broker or cause the insurance companies/broker to furnish certificates of insurance evidencing all coverages required herein to Landlord. Landlord reserves the right to require complete, certified copies of all required insurance policies including any endorsements. No such policy shall be cancelable or subject to reduction of coverage or other modification or cancellation except after twenty (20) days' prior written notice to Landlord from Tenant or its insurers (except in the event of non-payment of premium, in which case ten (10) days' written notice shall be given). All such policies shall be written as primary policies, not contributing with and not in excess of the coverage that Landlord may carry. Tenant's required policies shall contain severability of interests clauses stating that, except with respect to limits of insurance, coverage shall apply separately to each insured or additional insured. Tenant shall, at least twenty-five (25) days prior to the expiration of such policies, furnish Landlord with renewal certificates of insurance or binders. Tenant agrees that if Tenant does not take out and maintain such insurance and such failure continues for five (5) business days after written notice to Tenant, Landlord may (but shall not be required to) procure such insurance on Tenant's behalf and at its cost to be paid by Tenant as Additional Rent. Commercial General Liability, Commercial Automobile Liability, Umbrella Liability and Pollution Legal Liability insurance as

required above shall name Landlord, BioMed Realty, L.P., and BRE Edison Parent L.P., and their respective officers, employees, agents, general partners, members, subsidiaries, affiliates and Lenders ("Landlord Parties") as additional insureds as respects liability arising from work or operations performed by or on behalf of Tenant, Tenant's use or occupancy of Premises, and ownership, maintenance or use of vehicles by or on behalf of Tenant.

23.5. In each instance where insurance is to name Landlord Parties as additional insureds, Tenant shall, upon Landlord's written request, also designate and furnish certificates evidencing such Landlord Parties as additional insureds to (a) any Lender of Landlord holding a security interest in the Building or the Project, (b) the landlord under any lease whereunder Landlord is a tenant of the real property upon which the Building is located if the interest of Landlord is or shall become that of a tenant under a ground lease rather than that of a fee owner and (c) any management company retained by Landlord to manage the Project. No such additional insured coverage shall protect or insure against loss arising from the negligence or wrongful act or omission of an additional insured.

23.6. Subject to Section 23.7 below, Tenant assumes the risk of damage to any fixtures, goods, inventory, merchandise, equipment and leasehold improvements, and Landlord shall not be liable for injury to Tenant's business or any loss of income therefrom, relative to such damage, all as more particularly set forth within this Lease. Tenant shall, at Tenant's sole cost and expense, carry such insurance as Tenant desires for Tenant's protection with respect to personal property of Tenant or business interruption.

23.7. Each of Landlord and Tenant, for itself and on behalf of such party's insurers, hereby waive any and all rights of recovery or subrogation against the other and the officers, directors, employees, agents and representatives of the other with respect to any loss, damage, claims, suits or demands, howsoever caused, that are covered, or should have been covered as required under the Lease, by valid and collectible insurance, including any deductibles or self-insurance maintained thereunder. If necessary, each of Landlord and Tenant agrees to endorse the required insurance policies to permit waivers of subrogation as required hereunder and hold harmless and indemnify the parties entitled to indemnification as provided above for any loss or expense incurred as a result of a failure to obtain such waivers of subrogation from insurers. Such waivers shall continue so long as Landlord's and Tenant's respective insurers so permit. Any termination of such a waiver shall be by written notice to the other party, containing a description of the circumstances hereinafter set forth in this Section. Each of Landlord and Tenant, upon obtaining the policies of insurance required or permitted under this Lease, shall give notice to their respective insurance carriers that the foregoing waiver of subrogation is contained in this Lease. If such policies shall not be obtainable with such waiver or shall be so obtainable only at a premium over that chargeable without such waiver, then the party seeking such policy shall notify the other of such conditions, and the party so notified shall have ten (10) business days thereafter to either (a) procure such insurance with companies reasonably satisfactory to the other party or (b) agree to pay such additional premium (in Tenant's case, in the proportion that the area of the Premises bears to the insured area). If the parties do not accomplish either (a) or (b), then this Section shall have no effect during such time as such policies shall not be obtainable or the party in whose favor a waiver of subrogation is desired

refuses to pay the additional premium. If the release of either Landlord or Tenant, as set forth in the first sentence of this Section, shall contravene Applicable Laws, then the liability of the party in question shall be deemed not released but shall be secondary to the liability of the other party's insurer.

23.8. Landlord may require insurance policy limits required under this Lease to be raised to conform with requirements of Landlord's Lender or to bring coverage limits to levels then being required of new tenants within the Project.

23.9. Any costs incurred by Landlord pursuant to this Article shall constitute a portion of Operating Expenses.

23.10. The provisions of this Article 23 shall survive the expiration or earlier termination of this Lease.

24. Damage or Destruction

.

24.1. In the event of a partial destruction of (a) the Premises or (b) the Common Area of the Building or the Project ((a) and (b) together, the "Affected Areas") by fire or other perils covered by extended coverage insurance not exceeding twenty-five percent (25%) of the full insurable value thereof, and provided that (w) the damage thereto is such that the Affected Areas may be repaired, reconstructed or restored within a period of twelve (12 months from the date of the happening of such casualty, (x) Landlord shall receive insurance proceeds from its insurer or Lender sufficient to cover the cost of such repairs, reconstruction and restoration (except for any deductible amount provided by Landlord's policy, which deductible amount, if paid by Landlord, shall constitute an Operating Expense), (y) the repair, reconstruction or restoration of the Affected Areas is permitted by all applicable Loan Documents or otherwise consented to by any and all Lenders whose consent is required thereunder, and (z) such casualty was not intentionally caused by a Tenant Party, then Landlord shall commence and proceed diligently with the work of repair, reconstruction and restoration of the Affected Areas (including all Tenant Improvements) and this Lease shall continue in full force and effect.

24.2. In the event of any damage to or destruction of the Building or the Project other than as described in Section 24.1, Landlord may elect to repair, reconstruct and restore the Building or the Project, as applicable, in which case this Lease shall continue in full force and effect. If Landlord elects not to repair, reconstruct and restore the Building or the Project, as applicable, then this Lease shall terminate as of the date of such damage or destruction. In the event of any damage or destruction (regardless of whether such damage is governed by Section 24.1 or this Section), if (a) in Landlord's determination as set forth in the Damage Repair Estimate (as defined below), the Affected Areas cannot be repaired, reconstructed or restored within twelve (12) months after the date of the Damage Repair Estimate, (b) subject to Section 24.6, the Affected Areas are not actually repaired, reconstructed and restored within eighteen (18) months after the date of the Damage Repair Estimate, or (c) the damage and destruction occurs within the last twelve (12) months of the then-current Term, then Tenant shall have the right to terminate this Lease, effective as of the date of such damage or destruction, by delivering to Landlord its written notice of termination (a "Termination Notice") (y) with respect to

Subsections 24.2(a) and (c), no later than fifteen (15) days after Landlord delivers to Tenant Landlord's Damage Repair Estimate and (z) with respect to Subsection 24.2(b), no later than fifteen (15) days after such twelve (12) month period (as the same may be extended pursuant to Section 24.6) expires. If Tenant provides Landlord with a Termination Notice pursuant to Subsection 24.2(z), Landlord shall have an additional thirty (30) days after receipt of such Termination Notice to complete the repair, reconstruction and restoration. If Landlord does not complete such repair, reconstruction and restoration within such thirty (30) day period, then Tenant may terminate this Lease by giving Landlord written notice within two (2) business days after the expiration of such thirty (30) day period. If Landlord does complete such repair, reconstruction and restoration within such thirty (30) day period, then this Lease shall continue in full force and effect.

24.3. As soon as reasonably practicable, but in any event within sixty (60) days following the date of damage or destruction, Landlord shall notify Tenant of Landlord's good faith estimate of the period of time in which the repairs, reconstruction and restoration will be completed (the "Damage Repair Estimate"), which estimate shall be based upon the opinion of a contractor reasonably selected by Landlord and experienced in comparable repair, reconstruction and restoration of similar buildings. Additionally, Landlord shall give written notice to Tenant within sixty (60) days following the date of damage or destruction of its election not to repair, reconstruct or restore the Building or the Project, as applicable.

24.4. Upon any termination of this Lease under any of the provisions of this Article, the parties shall be released thereby without further obligation to the other from the date possession of the Premises is surrendered to Landlord, except with regard to (a) items occurring prior to the damage or destruction and (b) provisions of this Lease that, by their express terms, survive the expiration or earlier termination hereof.

24.5. In the event of repair, reconstruction and restoration as provided in this Article, all Rent to be paid by Tenant under this Lease shall be abated proportionately based on the extent to which Tenant's use of the Premises is impaired during the period of such repair, reconstruction or restoration, unless Landlord provides Tenant with other space during the period of repair, reconstruction and restoration that, in Tenant's reasonable opinion, is suitable for the temporary conduct of Tenant's business; provided, however, that the amount of such abatement shall be reduced by the amount of Rent that is received by Tenant as part of the business interruption or loss of rental income with respect to the Premises from the proceeds of business interruption or loss of rental income insurance.

24.6. Notwithstanding anything to the contrary contained in this Article, (a) Landlord shall not be required to repair, reconstruct or restore any damage or destruction to the extent that Landlord is prohibited from doing so by any applicable Loan Document or any Lender whose consent is required thereunder withholds its consent, and (b) should Landlord be delayed or prevented from completing the repair, reconstruction or restoration of the damage or destruction to the Premises after the occurrence of such damage or destruction by Force Majeure or delays caused by a Lender or Tenant Party, then the time for Landlord to commence or complete repairs, reconstruction and restoration shall be extended on a day-for-day basis; provided, however, that, at Landlord's election, Landlord shall be relieved of its obligation to make such repairs, reconstruction and restoration.

24.7. If Landlord is obligated to or elects to repair, reconstruct or restore as herein provided, then Landlord shall be obligated to make such repairs, reconstruction or restoration only with regard to (a) those portions of the Premises that were originally provided at Landlord's expense and (b) the Common Area portion of the Affected Areas. The repairs, reconstruction or restoration of improvements not originally provided by Landlord or at Landlord's expense shall be the obligation of Tenant. In the event Tenant has elected to upgrade certain improvements from Landlord's building standards (the "Building Standard"), Landlord shall, upon the need for replacement due to an insured loss, provide only the Building Standard, unless Tenant again elects to upgrade such improvements and pay any incremental costs related thereto, except to the extent that excess insurance proceeds, if received, are adequate to provide such upgrades, in addition to providing for basic repairs, reconstruction and restoration of the Premises, the Building and the Project.

24.8. Notwithstanding anything to the contrary contained in this Article, Landlord shall not have any obligation whatsoever to repair, reconstruct or restore the Premises if the damage resulting from any casualty covered under this Article occurs (a) during the thirteenth (13th) through the twenty-fourth (24th) months prior to the expiration of the Term and the Damage Repair Estimate indicates that more than six (6) months will be required for such repair, reconstruction or restoration, (b) during the seventh (7th) through twelfth (12th) months prior to the expiration of the Term and the Damage Repair Estimate indicates that more than thirty (30) days will be required for such repair, reconstruction or restoration, (c) during the last six (6) months of the Term or (d) to the extent that insurance proceeds are not available therefor.

24.9. Landlord's obligation, should it elect or be obligated to repair, reconstruct or restore, shall be limited to the Affected Areas, and shall be conditioned upon Landlord receiving any permits or authorizations required by Applicable Laws. Tenant shall, at its expense, replace or fully repair all of Tenant's personal property and any Alterations installed by Tenant existing at the time of such damage or destruction. If Affected Areas are to be repaired, reconstructed or restored in accordance with the foregoing, Landlord shall make available to Tenant any portion of insurance proceeds it receives that are allocable to the Alterations constructed by Tenant pursuant to this Lease; provided that Landlord shall not be required to do so while Tenant is in default under this Lease, and subject to the requirements of any Lender of Landlord.

24.10. This Article sets forth the terms and conditions upon which this Lease may terminate in the event of any damage or destruction. Accordingly, the parties hereby waive the provisions of any Applicable Laws (and any successor statutes) permitting the parties to terminate this Lease as a result of any damage or destruction.

25. Eminent Domain.

25.1. In the event (a) the whole of all Affected Areas or (b) such part thereof as shall substantially interfere with Tenant's use and occupancy of the Premises for the Permitted Use shall be taken for any public or quasi-public purpose by any lawful power or authority by exercise of the right of appropriation, condemnation or eminent domain, or sold to prevent such taking, Tenant or Landlord may terminate this Lease effective as of the date possession is required to be surrendered to such authority, except with regard to (y) items occurring prior to the taking and (z) provisions of this Lease that, by their express terms, survive the expiration or earlier termination hereof.

25.2. In the event of a partial taking of (a) the Building or the Project or (b) drives, walkways or parking areas serving the Building or the Project for any public or quasi-public purpose by any lawful power or authority by exercise of right of appropriation, condemnation, or eminent domain, or sold to prevent such taking, then, without regard to whether any portion of the Premises occupied by Tenant was so taken, Landlord may elect to terminate this Lease (except with regard to (y) items occurring prior to the taking and (z) provisions of this Lease that, by their express terms, survive the expiration or earlier termination hereof) as of such taking if such taking is, in Landlord's sole opinion, of a material nature such as to make it uneconomical to continue use of the unappropriated portion for purposes of renting office or laboratory space.

25.3. To the extent permitted under all applicable Loan Documents or otherwise consented to by any and all Lenders whose consent is required thereunder, Tenant shall be entitled to any award that is specifically awarded as compensation for (a) the taking of Tenant's personal property that was installed at Tenant's expense and (b) the costs of Tenant moving to a new location. Except as set forth in the previous sentence, any award for such taking shall be the property of Landlord.

25.4. If, upon any taking of the nature described in this Article, this Lease continues in effect, then Landlord shall promptly proceed to restore the Affected Areas to substantially their same condition prior to such partial taking. To the extent such restoration is infeasible, as determined by Landlord in its sole and absolute discretion, the Rent shall be decreased proportionately to reflect the loss of any portion of the Premises no longer available to Tenant. Notwithstanding anything to the contrary contained in this Article, Landlord shall not be required to restore the Affected Areas to the extent that Landlord is prohibited from doing so by any applicable Loan Document or any Lender whose consent is required thereunder withholds its consent.

25.5. This Article sets forth the terms and conditions upon which this Lease may terminate in the event of any damage or destruction. Accordingly, the parties hereby waive the provisions of any Applicable Laws (and any successor statutes) permitting the parties to terminate this Lease as a result of any damage or destruction.

26. Surrender.

26.1. At least thirty (30) days prior to Tenant's surrender of possession of any part of the Premises, Tenant shall provide Landlord with a facility decommissioning and Hazardous Materials closure plan for the Premises ("Exit Survey") prepared by an independent third party state-certified professional with appropriate expertise, which Exit Survey must be reasonably acceptable to Landlord. The Exit Survey shall comply with the American National Standards Institute's Laboratory Decommissioning guidelines (ANSI/AIHA Z9.11-2008) or any successor standards published by ANSI or any successor organization (or, if ANSI and its successors no longer exist, a similar entity publishing similar standards). In addition, at least ten (10) days prior to Tenant's surrender of possession of any part of the Premises, Tenant shall (a) provide Landlord with written evidence of all appropriate governmental releases obtained by Tenant in accordance with Applicable Laws, including laws pertaining to the surrender of the Premises, (b)

place Laboratory Equipment Decontamination Forms on all decommissioned equipment to assure safe occupancy by future users and (c) conduct a site inspection with Landlord. In addition, Tenant agrees to remain responsible after the surrender of the Premises for the remediation of any recognized environmental conditions set forth in the Exit Survey and comply with any recommendations set forth in the Exit Survey. Tenant's obligations under this Section shall survive the expiration or earlier termination of the Lease.

26.2. No surrender of possession of any part of the Premises shall release Tenant from any of its obligations hereunder, unless such surrender is accepted in writing by Landlord.

26.3. The voluntary or other surrender of this Lease by Tenant shall not effect a merger with Landlord's fee title or leasehold interest in the Premises, the Building, the Property or the Project, unless Landlord consents in writing, and shall, at Landlord's option, operate as an assignment to Landlord of any or all subleases.

26.4. The voluntary or other surrender of any ground or other underlying lease that now exists or may hereafter be executed affecting the Building or the Project, or a mutual cancellation thereof or of Landlord's interest therein by Landlord and its lessor shall not effect a merger with Landlord's fee title or leasehold interest in the Premises, the Building or the Property and shall, at the option of the successor to Landlord's interest in the Building or the Project, as applicable, operate as an assignment of this Lease.

27. Holding Over.

27.1. If, with Landlord's prior written consent, Tenant holds possession of all or any part of the Premises after the Term, Tenant shall become a tenant from month to month after the expiration or earlier termination of the Term, and in such case Tenant shall continue to pay (a) Base Rent in accordance with Article 7, as adjusted in accordance with Article 8, and (b) any amounts for which Tenant would otherwise be liable under this Lease if the Lease were still in effect, including payments for Tenant's Adjusted Share of Operating Expenses. Any such month-to-month tenancy shall be subject to every other term, covenant and agreement contained herein.

27.2. Notwithstanding the foregoing, if Tenant remains in possession of the Premises after the expiration or earlier termination of the Term without Landlord's prior written consent, (a) Tenant shall become a tenant at sufferance subject to the terms and conditions of this Lease, except that the monthly rent shall be equal to one hundred fifty percent (150%) of the Rent in effect during the last thirty (30) days of the Term, and (b) if such holdover persists for more than thirty (30) days after the earlier of (i) the expiration or earlier termination of the Term and (ii) the date Landlord notifies Tenant that Landlord has procured a tenant that is ready, willing and able to sign a lease for the Premises (or a portion thereof), Tenant shall be liable to Landlord for any and all damages suffered by Landlord as a result of such holdover, including any lost rent or consequential, special and indirect damages (in each case, regardless of whether such damages are foreseeable).

27.3. Acceptance by Landlord of Rent after the expiration or earlier termination of the Term shall not result in an extension, renewal or reinstatement of this Lease.

27.4. The foregoing provisions of this Article are in addition to and do not affect Landlord's right of reentry or any other rights of Landlord hereunder or as otherwise provided by Applicable Laws.

27.5. The provisions of this Article shall survive the expiration or earlier termination of this Lease.

28. Indemnification and Exculpation.

28.1. Tenant agrees to Indemnify the Landlord Indemnitees from and against any and all Claims of any kind or nature, real or alleged, arising from (a) injury to or death of any person or damage to any property occurring within or about the Premises, the Building, the Property or the Project, arising directly or indirectly out of (i) the presence at or use or occupancy of the Premises or Project by a Tenant Party, (ii) an act or omission on the part of any Tenant Party, (b) a breach or default by Tenant in the performance of any of its obligations hereunder (including any Claim asserted by any Lender against any Landlord Indemnitees under any Loan Document as a direct result of such breach or default by Tenant) or (c) injury to or death of persons or damage to or loss of any property, real or alleged, arising from the serving of alcoholic beverages at the Premises or Project, including liability under any dram shop law, host liquor law or similar Applicable Law, except to the extent directly caused by Landlord's negligence or willful misconduct. Tenant's obligations under this Section shall not be affected, reduced or limited by any limitation on the amount or type of damages, compensation or benefits payable by or for Tenant under workers' compensation acts, disability benefit acts, employee benefit acts or similar legislation. Tenant's obligations under this Section shall survive the expiration or earlier termination of this Lease. Subject to Sections 23.6, 28.2 and 31.12 and any subrogation provisions contained in the Work Letter, Landlord agrees to Indemnify the Tenant Parties from and against any and all Claims arising from injury to or death of any person or damage to or loss of any physical property occurring within or about the Premises, the Building, the Property or the Project to the extent directly arising out of Landlord's gross negligence or willful misconduct.

28.2. Notwithstanding anything in this Lease to the contrary, Landlord shall not be liable to Tenant for and Tenant assumes all risk of (a) damage or losses arising from fire, electrical malfunction, gas explosion or water damage of any type (including broken water lines, malfunctioning fire sprinkler systems, roof leaks or stoppages of lines), unless any such loss is due to Landlord's willful disregard of written notice by Tenant of need for a repair that Landlord is responsible to make for an unreasonable period of time, and (b) damage to personal property or scientific research, including loss of records kept by Tenant within the Premises (in each case, regardless of whether such damages are foreseeable). Tenant further waives any claim for injury to Tenant's business or loss of income relating to any such damage or destruction of personal property as described in this Section. Notwithstanding anything in the foregoing or this Lease to the contrary, except (x) as otherwise provided herein (including Section 27.2), (y) as may be provided by Applicable Laws or (z) in the event of Tenant's breach of Article 21 or Section 26.1, in no event shall Landlord or Tenant be liable to the other for any consequential, special or indirect damages arising out of this Lease, including lost profits (provided that this Subsection 28.2(z) shall not limit Tenant's liability for Base Rent or Additional Rent pursuant to this Lease).

28.3. Landlord shall not be liable for any damages arising from any act, omission or neglect of any other tenant in the Building or the Project, or of any other third party.

28.4. Tenant acknowledges that security devices and services, if any, while intended to deter crime, may not in given instances prevent theft or other criminal acts. Landlord shall not be liable for injuries or losses arising from criminal acts of third parties, and Tenant assumes the risk that any security device or service may malfunction or otherwise be circumvented by a criminal. If Tenant desires protection against such criminal acts, then Tenant shall, at Tenant's sole cost and expense, obtain appropriate insurance coverage. Tenant's security programs and equipment for the Premises shall be coordinated with Landlord and subject to Landlord's reasonable approval.

28.5. The provisions of this Article shall survive the expiration or earlier termination of this Lease.

29. Assignment or Subletting.

29.1. Except as hereinafter expressly permitted, none of the following (each, a "Transfer"), either voluntarily or by operation of Applicable Laws, shall be directly or indirectly performed without Landlord's prior written consent, which consent shall not be unreasonably withheld, conditioned or delayed: (a) Tenant selling, hypothecating, assigning, pledging, encumbering or otherwise transferring this Lease or subletting the Premises or (b) a controlling interest in Tenant being sold, assigned or otherwise transferred (other than as a result of shares in Tenant being sold on a public stock exchange). For purposes of the preceding sentence, "control" means (a) owning (directly or indirectly) more than fifty percent (50%) of the stock or other equity interests of another person or (b) possessing, directly or indirectly, the power to direct or cause the direction of the management and policies of such person. Tenant shall have the right to Transfer, without Landlord's prior written consent, Tenant's interest in this Lease or the Premises or any part thereof to (i) any person that as of the date of determination and at all times thereafter directly, or indirectly through one or more intermediaries, controls, is controlled by or is under common control with Tenant ("Tenant's Affiliate") or (ii) any person or any entity with which Tenant is merged or to which all or substantially all of Tenant's assets or all or substantially all of the ownership interests in Tenant are sold; provided that (in each instance under the foregoing clauses (i) and (ii)) Tenant shall notify Landlord in writing at least ten (10) business days prior to the effectiveness of such Transfer (an "Exempt Transfer" and otherwise comply with the requirements of this Lease regarding such Transfer; and provided, further, that the person that will be the tenant under this Lease after the Exempt Transfer has a net worth (as of both the day immediately prior to and the day immediately after the Exempt Transfer) that is equal to or greater than the net worth (as of both the Execution Date and the date of the Exempt Transfer) of the transferring Tenant. For purposes of the immediately preceding sentence, "control" requires both (a) owning (directly or indirectly) more than fifty percent (50%) of the stock or other equity interests of another person and (b) possessing, directly or indirectly, the power to direct or cause the direction of the management and policies of such person. In no event shall Tenant perform a Transfer (other than an Exempt Transfer) (a) to or with an entity that is a tenant at the Project or at property owned by Landlord or an affiliate of Landlord in

Cambridge, Massachusetts unless, upon Tenant's written request, Landlord confirms in writing to Tenant that Landlord or such affiliate does not have available space at the Project or such other property of Landlord's affiliate or (b) if the proposed transferee is in then-active discussions or negotiations with Landlord or an affiliate of Landlord as reasonably determined by Landlord after receipt of a written request from Tenant for such determination. Notwithstanding anything in this Lease to the contrary, if (a) any proposed transferee, assignee or sublessee of Tenant has been required by any prior landlord, Lender or Governmental Authority to take material remedial action in connection with Hazardous Materials contaminating a property if the contamination resulted from such party's action or omission or use of the property in question or (b) any proposed transferee, assignee or sublessee is subject to a material enforcement order issued by any Governmental Authority in connection with the use, disposal or storage of Hazardous Materials, then it shall not be unreasonable for Landlord to withhold its consent to any proposed transfer, assignment or subletting (with respect to any such matter involving a proposed transferee, assignee or sublessee).

29.2. In the event Tenant desires to effect a Transfer, then, at least thirty (30) but not more than ninety (90) days prior to the date when Tenant desires the Transfer to be effective (the "Transfer Date"), Tenant shall provide written notice to Landlord (the "Transfer Notice") containing information (including references) concerning the character of the proposed transferee, assignee or sublessee; the Transfer Date; the most recent unconsolidated financial statements of Tenant and of the proposed transferee, assignee or sublessee satisfying the requirements of Section 40.2 ("Required Financials"); any ownership or commercial relationship between Tenant and the proposed transferee, assignee or sublessee; copies of Hazardous Materials Documents for the proposed transferee, assignee or sublessee; and the consideration and all other material terms and conditions of the proposed Transfer, all in such detail as Landlord shall reasonably require. Without limiting any other factors that Landlord may consider in determining whether to withhold, condition or delay its consent to any Transfer in accordance with Section 29.1 of this Lease, Tenant hereby acknowledges and agrees that (a) if Tenant does not deliver to Landlord the most recent consolidated financial statements of Tenant (or if Tenant is not the ultimate parent company, the unconsolidated financial statements of Tenant) and the most recent unconsolidated financial statements of such proposed transferee, then it shall be reasonable for Landlord to withhold its consent to any Transfer to such proposed transferee, (b) if Landlord reasonably determines that the proposed Transfer will diminish the value of Landlord's interest under this Lease, it shall be reasonable for Landlord to withhold its consent to any such Transfer and (c) if Landlord reasonably determines that such proposed Transferee's financial condition is not satisfactory, it shall be reasonable for Landlord to condition its consent to any such Transfer upon the proposed transferee's ultimate parent company providing a guaranty to Landlord of such transferee's obligations under this Lease, in a form acceptable to Landlord, which guaranty shall be executed and delivered to Landlord by the applicable guarantor prior to the Transfer Date, or upon Tenant or the proposed transferee providing other credit enhancements acceptable to Landlord (including without limitation an increased Security Deposit). For purposes of the immediately foregoing clause (c), such transferee's financial condition will be deemed not satisfactory if Landlord determines that such transferee is not capable of satisfying all of the obligations of the Tenant under this Lease.

29.3. Landlord, in determining whether consent should be given to a proposed Transfer, may give consideration to (a) the financial strength of Tenant and of such transferee, assignee or sublessee (notwithstanding Tenant remaining liable for Tenant's performance), (b) any change in use that such transferee, assignee or sublessee proposes to make in the use of the Premises and (c) Landlord's desire to exercise its rights under Section 29.7 to cancel this Lease. In no event shall Landlord be deemed to be unreasonable for declining to consent to a Transfer if any applicable Loan Document prohibits such assignment or any Lender whose consent is required thereunder withholds its consent, or if the Transfer is to a transferee, assignee or sublessee of poor reputation, lacking financial qualifications or seeking a change in the Permitted Use, or jeopardizing directly or indirectly the status of Landlord or any of Landlord's affiliates as a Real Estate Investment Trust under the Internal Revenue Code of 1986 (as the same may be amended from time to time, the "Revenue Code"). Notwithstanding anything contained in this Lease to the contrary, (w) no Transfer shall be consummated on any basis such that the rental or other amounts to be paid by the occupant, assignee, manager or other transferee thereunder would be based, in whole or in part, on the income or profits derived by the business activities of such occupant, assignee, manager or other transferee; (x) Tenant shall not furnish or render any services to an occupant, assignee, manager or other transferee with respect to whom transfer consideration is required to be paid, or manage or operate the Premises or any capital additions so transferred, with respect to which transfer consideration is being paid; (y) Tenant shall not consummate a Transfer with any person in which Landlord owns an interest, directly or indirectly (by applying constructive ownership rules set forth in Section 856(d)(5) of the Revenue Code); and (z) Tenant shall not consummate a Transfer with any person or in any manner that could cause any portion of the amounts received by Landlord pursuant to this Lease or any sublease, license or other arrangement for the right to use, occupy or possess any portion of the Premises to fail to qualify as "rents from real property" within the meaning of Section 856(d) of the Revenue Code, or any similar or successor provision thereto or which could cause any other income of Landlord to fail to qualify as income described in Section 856(c)(2) of the Revenue Code.

29.4. The following are conditions precedent to a Transfer or to Landlord considering a request by Tenant to a Transfer:

(a) Tenant shall remain fully liable under this Lease. Tenant agrees that it shall not be (and shall not be deemed to be) a guarantor or surety of this Lease, however, and waives its right to claim that is it is a guarantor or surety or to raise in any legal proceeding any guarantor or surety defenses permitted by this Lease or by Applicable Laws;

(b) [Intentionally omitted];

(c) In the case of an Exempt Transfer, Tenant shall provide Landlord with evidence reasonably satisfactory to Landlord that the Transfer qualifies as an Exempt Transfer;

(d) Tenant shall provide Landlord with evidence reasonably satisfactory to Landlord that the value of Landlord's interest under this Lease shall not be diminished or reduced by the proposed Transfer. Such evidence shall include evidence respecting the relevant business experience and financial responsibility and status of the proposed transferee, assignee or sublessee;

(e) Tenant shall reimburse Landlord for Landlord's actual costs and expenses, including reasonable attorneys' fees, charges and disbursements incurred in connection with the review, processing and documentation of such request;

(f) Except with respect to an Exempt Transfer, if Tenant's transfer of rights or sharing of the Premises provides for the receipt by, on behalf of or on account of Tenant of any consideration of any kind whatsoever (including a premium rental for a sublease or lump sum payment for an assignment, but excluding Tenant's reasonable costs in marketing and subleasing the Premises) in excess of the rental and other charges due to Landlord under this Lease, Tenant shall pay fifty percent (50%) of all of such excess to Landlord, after making deductions for any reasonable marketing expenses, tenant improvement funds expended by Tenant, alterations, cash concessions, brokerage commissions, attorneys' fees and free rent actually paid by Tenant. If such consideration consists of cash paid to Tenant, payment to Landlord shall be made upon receipt by Tenant of such cash payment;

(g) The proposed transferee, assignee or sublessee shall agree that, in the event Landlord gives such proposed transferee, assignee or sublessee notice that Tenant is in default under this Lease, such proposed transferee, assignee or sublessee shall thereafter make all payments otherwise due Tenant directly to Landlord, which payments shall be received by Landlord without any liability being incurred by Landlord, except to credit such payment against those due by Tenant under this Lease, and any such proposed transferee, assignee or sublessee shall agree to attorn to Landlord or its successors and assigns should this Lease be terminated for any reason; provided, however, that in no event shall Landlord or its Lenders, successors or assigns be obligated to accept such attornment;

(h) Landlord's consent to any such Transfer shall be effected on Landlord's forms, which shall be commercially reasonable;

(i) Tenant shall not then be in default of any monetary obligation or any material non-monetary obligation hereunder in any respect;

(j) Tenant shall not then be in default of any nonmaterial, nonmonetary obligation beyond any applicable notice and cure period;

(k) Such proposed transferee, assignee or sublessee's use of the Premises shall be the same as the Permitted Use;

(l) Landlord shall not be bound by any provision of any agreement pertaining to the Transfer, except for Landlord's written consent to the same;

(m) Tenant shall pay all transfer and other taxes (including interest and penalties) assessed or payable for any Transfer;

(n) Landlord's consent (or waiver of its rights) for any Transfer shall not waive Landlord's right to consent or refuse consent to any later Transfer;

(o) Tenant shall deliver to Landlord one executed copy of any and all written instruments evidencing or relating to the Transfer; and

(p) Tenant shall deliver to Landlord a list of Hazardous Materials (as defined below), certified by the proposed transferee, assignee or sublessee to be true and correct, that the proposed transferee, assignee or sublessee intends to use or store in the Premises. Additionally, Tenant shall deliver to Landlord, on or before the date any proposed transferee, assignee or sublessee takes occupancy of the Premises, all of the items relating to Hazardous Materials of such proposed transferee, assignee or sublessee as described in Section 21.2.

29.5. Any Transfer that is not in compliance with the provisions of this Article or with respect to which Tenant does not fulfill its obligations pursuant to this Article shall be void and shall, at the option of Landlord, terminate this Lease.

29.6. Notwithstanding any Transfer, Tenant shall remain fully and primarily liable for the payment of all Rent and other sums due or to become due hereunder, and for the full performance of all other terms, conditions and covenants to be kept and performed by Tenant. The acceptance of Rent or any other sum due hereunder, or the acceptance of performance of any other term, covenant or condition thereof, from any person or entity other than Tenant shall not be deemed a waiver of any of the provisions of this Lease or a consent to any Transfer.

29.7. If Tenant delivers to Landlord a Transfer Notice indicating a desire to transfer all or substantially all of the Premises and/or for all or substantially all of the remainder of the Term to a proposed transferee, assignee or sublessee other than pursuant to an Exempt Transfer, then Landlord shall have the option, exercisable by giving notice to Tenant at any time within ten (10) business days after Landlord's receipt of such Transfer Notice, to terminate this Lease as of the date specified in the Transfer Notice as the Transfer Date, except for those provisions that, by their express terms, survive the expiration or earlier termination hereof. If Landlord exercises such option, then Tenant shall have the right to withdraw such Transfer Notice by delivering to Landlord written notice of such election within five (5) business days after Landlord's delivery of notice electing to exercise Landlord's option to terminate this Lease. In the event Tenant withdraws the Transfer Notice as provided in this Section, this Lease shall continue in full force and effect. No failure of Landlord to exercise its option to terminate this Lease shall be deemed to be Landlord's consent to a proposed Transfer.

29.8. If Tenant sublets the Premises or any portion thereof, Tenant hereby immediately and irrevocably assigns to Landlord, as security for Tenant's obligations under this Lease, all rent from any such subletting, and appoints Landlord as assignee and attorney-in-fact for Tenant, and Landlord (or a receiver for Tenant appointed on Landlord's application) may collect such rent and apply it toward Tenant's obligations under this Lease; provided that, until the occurrence of a Default (as defined below) by Tenant, Tenant shall have the right to collect such rent.

29.9. In the event that Tenant enters into a sublease for the entire Premises in accordance with this Article that expires within two (2) days of the Term Expiration Date, the term expiration date of such sublease shall, notwithstanding anything in this Lease, the sublease or any consent to the sublease to the contrary, be deemed to be the date that is two (2) days prior to the Term Expiration Date.

30. Subordination and Attornment.

30.1. This Lease shall be subject and subordinate to the lien of any mortgage, deed of trust, or lease in which Landlord is tenant now or hereafter in force against the Building or the Project and to all advances made or hereafter to be made upon the security thereof without the necessity of the execution and delivery of any further instruments on the part of Tenant to effectuate such subordination.

30.2. Notwithstanding the foregoing, Tenant shall execute and deliver upon demand such further instrument or instruments evidencing such subordination of this Lease to the lien of any such mortgage or mortgages or deeds of trust or lease in which Landlord is tenant as may be required by Landlord. If any Lender so elects, however, this Lease shall be deemed prior in lien to any such lease, mortgage, or deed of trust upon or including the Premises regardless of date and Tenant shall execute a statement in writing to such effect at Landlord's request. If Tenant fails to execute any document required from Tenant under this Section within ten (10) business days after written request therefor, it shall be a default hereunder, subject to applicable notice and cure periods. For the avoidance of doubt, "Lenders" shall also include historic tax credit investors and new market tax credit investors.

30.3. Upon written request of Landlord and opportunity for Tenant to review, Tenant agrees to execute any Lease amendments not materially altering the terms of this Lease or increasing Tenant's monetary obligations or materially increasing Tenant's other material non-monetary obligations hereunder, if required by a Lender incident to the financing of the real property of which the Premises constitute a part.

30.4. In the event any proceedings are brought for foreclosure, or in the event of the exercise of the power of sale under any mortgage or deed of trust made by Landlord covering the Premises, Tenant shall at the election of the purchaser at such foreclosure or sale attorn to the purchaser upon any such foreclosure or sale and recognize such purchaser as Landlord under this Lease.

30.5 Landlord agrees to use commercially reasonable efforts to request from its current Lender of the Property that such Lender enter into its standard subordination, non-disturbance and attornment agreement (the "SNDA") with Tenant. If Lender so agrees to enter into the SNDA, Tenant shall pay the reasonable charges or fees which may be required by such Lender in order to obtain such agreement.

31. Defaults and Remedies.

31.1. Late payment by Tenant to Landlord of Rent and other sums due shall cause Landlord to incur costs not contemplated by this Lease, the exact amount of which shall be extremely difficult and impracticable to ascertain. Such costs include processing and accounting charges and late charges that may be imposed on Landlord by the terms of any mortgage or trust deed covering the Premises. Therefore, if any installment of Rent due from Tenant is not received by Landlord within three (3) business days after the date such payment is due, Tenant shall pay to Landlord (a) an additional sum of five percent (5%) of the overdue Rent as a late

charge plus (b) interest at an annual rate (the "Default Rate") equal to the lesser of (a) twelve percent (12%) and (b) the highest rate permitted by Applicable Laws. The parties agree that this late charge represents a fair and reasonable estimate of the costs that Landlord shall incur by reason of late payment by Tenant and shall be payable as Additional Rent to Landlord due with the next installment of Rent or within five (5) business days after Landlord's demand, whichever is earlier. Landlord's acceptance of any Additional Rent (including a late charge or any other amount hereunder) shall not be deemed an extension of the date that Rent is due or prevent Landlord from pursuing any other rights or remedies under this Lease, at law or in equity.

31.2. No payment by Tenant or receipt by Landlord of a lesser amount than the Rent payment herein stipulated shall be deemed to be other than on account of the Rent, nor shall any endorsement or statement on any check or any letter accompanying any check or payment as Rent be deemed an accord and satisfaction, and Landlord may accept such check or payment without prejudice to Landlord's right to recover the balance of such Rent or pursue any other remedy provided in this Lease or in equity or at law. If a dispute shall arise as to any amount or sum of money to be paid by Tenant to Landlord hereunder, Tenant shall have the right to make payment "under protest," such payment shall not be regarded as a voluntary payment, and there shall survive the right on the part of Tenant to institute suit for recovery of the payment paid under protest.

31.3. If Tenant fails to pay any sum of money required to be paid by it hereunder or perform any other act on its part to be performed hereunder, in each case within the applicable cure period (if any) described in Section 31.4, then Landlord may (but shall not be obligated to), without waiving or releasing Tenant from any obligations of Tenant, make such payment or perform such act; provided that such failure by Tenant unreasonably interfered with the use of the Building or the Project by any other tenant or with the efficient operation of the Building or the Project, or resulted or could have resulted in a violation of Applicable Laws or the cancellation of an insurance policy maintained by Landlord. Notwithstanding the foregoing, in the event of an emergency, Landlord shall have the right to enter the Premises and act in accordance with its rights as provided elsewhere in this Lease. In addition to the late charge described in Section 31.1, Tenant shall pay to Landlord as Additional Rent all sums so paid or incurred by Landlord, together with interest at the Default Rate, computed from the date such sums were paid or incurred.

31.4. The occurrence of any one or more of the following events shall constitute a "Default" hereunder by Tenant:

(a) If Tenant (i) abandons the Premises; or (ii)(A) Landlord receives notice of Tenant's vacation of or Tenant's intention to vacate the Premises prior to the scheduled expiration or earlier termination of this Lease, other than in accordance with a right expressly granted to Tenant under this Lease, and such vacation (or intention to vacate) is related to financial hardship or Tenant's inability to pay its debts as they become due, a dissolution of Tenant, or the liquidation or winding up of Tenant's business operations; or (B) Tenant vacates the Premises prior to the scheduled expiration or earlier termination of this Lease, other than in accordance with a right expressly granted to Tenant under this Lease, within the one-hundred

twenty (120) day period following the filing of any involuntary petition against Tenant or the attachment of Tenant's interest in this Lease (notwithstanding anything to the contrary in Sections 31.4(g) and 31.4(i));

(b) Tenant fails to make any payment of Rent, as and when due, or to satisfy its obligations under Article 19, where such failure shall continue for a period of three (3) business days after written notice thereof from Landlord to Tenant;

(c) Tenant fails to observe or perform any obligation or covenant contained herein (other than described in Sections 31.4(a) and 31.4(b)) to be performed by Tenant, where such failure continues for a period of thirty (30) days after written notice thereof from Landlord to Tenant; provided that, if the nature of Tenant's default is such that it reasonably requires more than thirty (30) days to cure, Tenant shall not be deemed to be in Default if Tenant commences such cure within such thirty (30) day period and thereafter diligently prosecutes the same to completion; and provided, further, that such cure is completed no later than ninety (90) days after Tenant's receipt of written notice from Landlord;

(d) Tenant makes an assignment for the benefit of creditors;

(e) A receiver, trustee or custodian is appointed to or does take title, possession or control of all or substantially all of Tenant's assets;

(f) Tenant files a voluntary petition under the United States Bankruptcy Code or any successor statute (as the same may be amended from time to time, the "Bankruptcy Code") or an order for relief is entered against Tenant pursuant to a voluntary or involuntary proceeding commenced under any chapter of the Bankruptcy Code;

(g) Any involuntary petition is filed against Tenant under any chapter of the Bankruptcy Code and is not dismissed within one hundred twenty (120) days;

(h) Tenant fails to deliver an estoppel certificate in accordance with Article 20; or

(i) Tenant's interest in this Lease is attached, executed upon or otherwise judicially seized and such action is not released within one hundred twenty (120) days of the action.

Notices given under this Section shall specify the alleged default and shall demand that Tenant perform the provisions of this Lease or pay the Rent that is in arrears, as the case may be, within the applicable period of time, or quit the Premises. No such notice shall be deemed a forfeiture or a termination of this Lease unless Landlord elects otherwise in such notice.

31.5. In the event of a Default by Tenant, and at any time thereafter, with or without notice or demand and without limiting Landlord in the exercise of any right or remedy that Landlord may have, Landlord has the right to do any or all of the following:

(a) Halt any Tenant Improvements or Alterations and order Tenant's contractors, subcontractors, consultants, designers and material suppliers to stop work;

(b) Terminate Tenant's right to possession of the Premises by written notice to Tenant or by any lawful means, in which case Tenant shall immediately surrender possession of the Premises to Landlord. In such event, Landlord shall have the immediate right to re-enter and remove all persons and property, and such property may be removed and stored in a public warehouse or elsewhere at the cost and for the account of Tenant, all without service of notice or resort to legal process and without being deemed guilty of trespass or becoming liable for any loss or damage that may be occasioned thereby; and

(c) Terminate this Lease, in which event Tenant shall immediately surrender possession of the Premises to Landlord. In such event, Landlord shall have the immediate right to re-enter and remove all persons and property, and such property may be removed and stored in a public warehouse or elsewhere at the cost and for the account of Tenant, all without service of notice or resort to legal process and without being deemed guilty of trespass or becoming liable for any loss or damage that may be occasioned thereby. In the event that Landlord shall elect to so terminate this Lease, then Landlord shall be entitled to recover from Tenant all damages incurred by Landlord by reason of Tenant's default, including the sum of:

(i) The worth at the time of award of any unpaid Rent that had accrued at the time of such termination; plus

(ii) The costs of restoring the Premises to the condition required under the terms of this Lease; plus

(iii) An amount (the "Election Amount") equal to either (A) the positive difference (if any, and measured at the time of such termination) between (1) the then-present value of the total Rent and other benefits that would have accrued to Landlord under this Lease for the remainder of the Term if Tenant had fully complied with the Lease minus (2) the then-present cash rental value of the Premises as determined by Landlord for what would be the then-unexpired Term if the Lease remained in effect, computed using the discount rate of the Federal Reserve Bank of San Francisco at the time of the award plus one (1) percentage point (the "Discount Rate") or (B) twelve (12) months (or such lesser number of months as may then be remaining in the Term) of Base Rent and Additional Rent at the rate last payable by Tenant pursuant to this Lease, in either case as Landlord specifies in such election. Landlord and Tenant agree that the Election Amount represents a reasonable forecast of the minimum damages expected to occur in the event of a breach, taking into account the uncertainty, time and cost of determining elements relevant to actual damages, such as fair market rent, time and costs that may be required to re-lease the Premises, and other factors; and that the Election Amount is not a penalty.

As used in Section 31.5(c)(i), "worth at the time of award" shall be computed by allowing interest at the Default Rate.

31.6. In addition to any other remedies available to Landlord at law or in equity and under this Lease, Landlord may continue this Lease in effect after Tenant's Default or abandonment and recover Rent as it becomes due. In addition, Landlord shall not be liable in any way whatsoever for its failure or refusal to relet the Premises. For purposes of this Section, the following acts by Landlord will not constitute the termination of Tenant's right to possession of the Premises:

(a) Acts of maintenance or preservation or efforts to relet the Premises, including alterations, remodeling, redecorating, repairs, replacements or painting as Landlord shall consider advisable for the purpose of reletting the Premises or any part thereof; or

(b) The appointment of a receiver upon the initiative of Landlord to protect Landlord's interest under this Lease or in the Premises.

Notwithstanding the foregoing, in the event of a Default by Tenant, Landlord may elect at any time to terminate this Lease and to recover damages to which Landlord is entitled.

31.7. If Landlord does not elect to terminate this Lease as provided in Section 31.5, then Landlord may, from time to time, recover all Rent as it becomes due under this Lease. At any time thereafter, Landlord may elect to terminate this Lease and to recover damages to which Landlord is entitled.

31.8. In the event Landlord elects to terminate this Lease and relet the Premises, Landlord may execute any new lease in its own name. Tenant hereunder shall have no right or authority whatsoever to collect any Rent from such tenant. The proceeds of any such reletting shall be applied as follows:

(a) First, to the payment of any indebtedness other than Rent due hereunder from Tenant to Landlord, including storage charges or brokerage commissions owing from Tenant to Landlord as the result of such reletting;

(b) Second, to the payment of the costs and expenses of reletting the Premises, including (i) alterations and repairs that Landlord deems reasonably necessary and advisable and (ii) reasonable attorneys' fees, charges and disbursements incurred by Landlord in connection with the retaking of the Premises and such reletting;

(c) Third, to the payment of Rent and other charges due and unpaid hereunder; and

(d) Fourth, to the payment of future Rent and other damages payable by Tenant under this Lease.

31.9. All of Landlord's rights, options and remedies hereunder shall be construed and held to be nonexclusive and cumulative. Landlord shall have the right to pursue any one or all of such remedies, or any other remedy or relief that may be provided by Applicable Laws, whether or not stated in this Lease. No waiver of any default of Tenant hereunder shall be implied from any acceptance by Landlord of any Rent or other payments due hereunder or any omission by Landlord to take any action on account of such default if such default persists or is repeated, and no express waiver shall affect defaults other than as specified in such waiver. Notwithstanding any provision of this Lease to the contrary, in no event shall Landlord be required to mitigate its damages with respect to any default by Tenant, except as required by Applicable Laws. Any such obligation imposed by Applicable Laws upon Landlord to relet the Premises after any termination of this Lease shall be subject to the reasonable requirements of Landlord to (a) lease to high quality tenants on such terms as Landlord may from time to time deem appropriate in its discretion and (b) develop the Project in a harmonious manner with a mix of uses, tenants, floor areas, terms of tenancies, etc., as determined by Landlord. Landlord shall not be obligated to relet the Premises to (y) any Tenant's Affiliate or (z) any party (i) unacceptable to a Lender, (ii) that requires Landlord to make improvements to or re-demise the Premises, (iii) that desires to change the Permitted Use, (iv) that desires to lease the Premises for more or less than the remaining Term or (v) to whom Landlord or an affiliate of Landlord may desire to lease other available space in the Project or at another property owned by Landlord or an affiliate of Landlord.

31.10. Landlord's termination of (a) this Lease or (b) Tenant's right to possession of the Premises shall not relieve Tenant of any liability to Landlord that has previously accrued or that shall arise based upon events that occurred prior to the later to occur of (y) the date of Lease termination and (z) the date Tenant surrenders possession of the Premises.

31.11. To the extent permitted by Applicable Laws, Tenant waives any and all rights of redemption granted by or under any present or future Applicable Laws if Tenant is evicted or dispossessed for any cause, or if Landlord obtains possession of the Premises due to Tenant's default hereunder or otherwise.

31.12. Landlord shall not be in default or liable for damages under this Lease unless Landlord fails to perform obligations required of Landlord within a reasonable time, but in no event shall such failure continue for more than thirty (30) days after written notice from Tenant specifying the nature of Landlord's failure; provided, however, that if the nature of Landlord's obligation is such that more than thirty (30) days are required for its performance, then Landlord shall not be in default if Landlord commences performance within such thirty (30) day period and thereafter diligently prosecutes the same to completion. If Landlord fails to commence to cure any default by Landlord within the period provided above in this paragraph and if, as a result the default, Tenant is incapable despite commercially reasonable efforts to continue operations within the Premises, Tenant may give Landlord an additional written notice confirming that the default has not been cured and that Tenant intends to cure such default, and, if Landlord fails to cure such default within thirty (30) days after such notice, Tenant may take such steps within the confines of its Premises as are reasonably appropriate to cure the default and seek to recover from Landlord the reasonable cost of such cure. Tenant shall have no right to perform any

obligation of Landlord in lieu of Landlord to the extent the same involves or may impact any base building system, any structural element of the Building, or any area of the Building outside of the Premises, including, without limitation, the Common Area or the premises of any other tenant or occupant of the Building (collectively, the "Excluded Systems/Areas"). Landlord's liability to keep, maintain, and repair shall always be limited to the cost of making such repair or accomplishing such maintenance or repair and Landlord shall not be liable for any consequential or any indirect damages. In no event shall Tenant have the right to terminate this Lease or offset from Rent as a result of Landlord's default. Notwithstanding the above provisions of this Section 31.12 to the contrary, in emergency situations such that the prior written notice to Landlord provided for above is not practical, Tenant may, upon such shorter period of written notice or contemporaneous written and oral notice as is appropriate under the circumstances, and excluding in all instances any work or access to Excluded Systems/Areas, take such steps as are reasonably appropriate to cure the default, in which event Tenant's rights with respect to recovering the cost of such cure shall be as provided above.

31.13. In the event of any default by Landlord, Tenant shall give notice by registered or certified mail to any (a) beneficiary of a deed of trust or (b) mortgagee under a mortgage covering the Premises, the Building or the Project and to any landlord of any lease of land upon or within which the Premises, the Building or the Project is located, and shall offer such beneficiary, mortgagee or landlord a reasonable opportunity to cure the default, including time to obtain possession of the Building or the Project by power of sale or a judicial action if such should prove necessary to effect a cure; provided that Landlord shall furnish to Tenant in writing, upon written request by Tenant, the names and addresses of all such persons who are to receive such notices.

32. Bankruptcy. In the event a debtor, trustee or debtor in possession under the Bankruptcy Code, or another person with similar rights, duties and powers under any other Applicable Laws, proposes to cure any default under this Lease or to assume or assign this Lease and is obliged to provide adequate assurance to Landlord that (a) a default shall be cured, (b) Landlord shall be compensated for its damages arising from any breach of this Lease and (c) future performance of Tenant's obligations under this Lease shall occur, then such adequate assurances shall include any or all of the following, as designated by Landlord in its sole and absolute discretion:

32.1. Those acts specified in the Bankruptcy Code or other Applicable Laws as included within the meaning of "adequate assurance," even if this Lease does not concern a shopping center or other facility described in such Applicable Laws;

32.2. A prompt cash payment to compensate Landlord for any monetary defaults or actual damages arising directly from a breach of this Lease;

32.3. A cash deposit in an amount at least equal to the then-current amount of the Security Deposit; or

32.4. The assumption or assignment of all of Tenant's interest and obligations under this Lease.

33. Brokers.

33.1. Landlord and Tenant each represents and warrants to the other that it has had no dealings with any real estate broker or agent in connection with the negotiation of this Lease other than Jones Lang LaSalle ("Broker"), and that it knows of no other real estate broker or agent that is or might be entitled to a commission in connection with this Lease. Landlord shall compensate Broker in relation to this Lease pursuant to a separate agreement between Landlord and Broker.

33.2. Tenant represents and warrants that no broker or agent has made any representation or warranty relied upon by Tenant in Tenant's decision to enter into this Lease, other than as contained in this Lease.

33.3. Tenant acknowledges and agrees that the employment of brokers by Landlord is for the purpose of solicitation of offers of leases from prospective tenants and that no authority is granted to any broker to furnish any representation (written or oral) or warranty from Landlord unless expressly contained within this Lease. Landlord is executing this Lease in reliance upon Tenant's representations, warranties and agreements contained within Sections 33.1 and 33.2.

33.4. Landlord and Tenant each agree to Indemnify, respectively, the Tenant Indemnitees and Landlord Indemnitees harmless from any and all cost or liability for compensation claimed by any broker or agent, other than Broker, employed or engaged by Landlord and Tenant or claiming to have been employed or engaged by Landlord or Tenant.

34. Definition of Landlord. With regard to obligations imposed upon Landlord pursuant to this Lease, the term "Landlord," as used in this Lease, shall refer only to Landlord or Landlord's then-current successor-in-interest. In the event of any transfer, assignment or conveyance of Landlord's interest in this Lease or in Landlord's fee title to or leasehold interest in the Property, as applicable, Landlord herein named (and in case of any subsequent transfers or conveyances, the subsequent Landlord) shall be automatically freed and relieved, from and after the date of such transfer, assignment or conveyance, from all liability for the performance of any covenants or obligations contained in this Lease thereafter to be performed by Landlord and, without further agreement, the transferee, assignee or conveyee of Landlord's in this Lease or in Landlord's fee title to or leasehold interest in the Property, as applicable, shall be deemed to have assumed and agreed to observe and perform any and all covenants and obligations of Landlord hereunder during the tenure of its interest in the Lease or the Property. Landlord or any subsequent Landlord may transfer its interest in the Premises or this Lease without Tenant's consent.

35. Limitation of Landlord's Liability.

35.1. If Landlord is in default under this Lease and, as a consequence, Tenant recovers a monetary judgment against Landlord, the judgment shall be satisfied only out of (a) the proceeds of sale received on execution of the judgment and levy against the right, title and interest of Landlord in the Building and the Project, (b) rent or other income from such real property receivable by Landlord or (c) the consideration received by Landlord from the sale, financing, refinancing or other disposition of all or any part of Landlord's right, title or interest in the Building or the Project.

35.2. Neither Landlord nor any of its affiliates, nor any of their respective partners, shareholders, directors, officers, employees, members or agents shall be personally liable for Landlord's obligations or any deficiency under this Lease, and service of process shall not be made against any shareholder, director, officer, employee or agent of Landlord or any of Landlord's affiliates. No partner, shareholder, director, officer, employee, member or agent of Landlord or any of its affiliates shall be sued or named as a party in any suit or action, and service of process shall not be made against any partner or member of Landlord except as may be necessary to secure jurisdiction of the partnership, joint venture or limited liability company, as applicable. No partner, shareholder, director, officer, employee, member or agent of Landlord or any of its affiliates shall be required to answer or otherwise plead to any service of process, and no judgment shall be taken or writ of execution levied against any partner, shareholder, director, officer, employee, member or agent of Landlord or any of its affiliates.

35.3. Tenant's directors, officers or employees shall not be personally liable for Tenant's obligations or any deficiency under this Lease. No director, officer or employee of Tenant shall be sued or named as a party in any suit or action, and service of process shall not be made against any director, officer or employee. No director, officer or employee of Tenant shall be required to answer or otherwise plead to any service of process, and no judgment shall be taken or writ of execution levied against any director, officer or employee.

35.4. Each of the covenants and agreements of this Article shall be applicable to any covenant or agreement either expressly contained in this Lease or imposed by Applicable Laws and shall survive the expiration or earlier termination of this Lease.

36. Joint and Several Obligations. If more than one person or entity executes this Lease as Tenant, then:

36.1. Each of them is jointly and severally liable for the keeping, observing and performing of all of the terms, covenants, conditions, provisions and agreements of this Lease to be kept, observed or performed by Tenant, and such terms, covenants, conditions, provisions and agreements shall be binding with the same force and effect upon each and all of the persons executing this Agreement as Tenant; and

36.2. The term "Tenant," as used in this Lease, shall mean and include each of them, jointly and severally. The act of, notice from, notice to, refund to, or signature of any one or more of them with respect to the tenancy under this Lease, including any renewal, extension, expiration, termination or modification of this Lease, shall be binding upon each and all of the persons executing this Lease as Tenant with the same force and effect as if each and all of them had so acted, so given or received such notice or refund, or so signed.

37. Representations. Tenant warrants and represents that (a) Tenant is duly incorporated or otherwise established or formed and validly existing under the laws of its state of incorporation, establishment or formation, (b) Tenant has and is duly qualified to do business in the state in which the Property is located, (c) Tenant has full corporate, partnership, trust, association or other appropriate power and authority to enter into this Lease and to perform all Tenant's obligations hereunder, (d) each person (and all of the persons if more than one signs) signing this

Lease on behalf of Tenant is duly and validly authorized to do so and (e) neither (i) the execution, delivery or performance of this Lease nor (ii) the consummation of the transactions contemplated hereby will violate or conflict with any provision of documents or instruments under which Tenant is constituted or to which Tenant is a party. In addition, Tenant represents that Tenant, and to Tenant's current, actual knowledge, its members, shareholders or other equity owners (without duty of inquiry) is not an entity with whom U.S. persons or entities are restricted from doing business under regulations of the Office of Foreign Asset Control ("OFAC") of the Department of the Treasury (including those named on OFAC's Specially Designated and Blocked Persons List) or under any statute, executive order (including the September 24, 2001, Executive Order Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism) or other similar governmental action. Landlord represents that, to its current, actual knowledge (without duty of inquiry), it is not an entity with whom U.S. persons or entities are restricted from doing business under regulations of OFAC of the Department of the Treasury (including those named on OFAC's Specially Designated and Blocked Persons List) or under any statute, executive order (including the September 24, 2001, Executive Order Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism) or other similar governmental action.

38. Confidentiality. Tenant shall keep the terms and conditions of this Lease and any information provided to Tenant or its employees, agents or contractors pursuant to Article 9 confidential and shall not (a) disclose to any third party any terms or conditions of this Lease or any other Lease-related document (including subleases, assignments, work letters, construction contracts, letters of credit, subordination agreements, non-disturbance agreements, brokerage agreements or estoppels) or (b) provide to any third party an original or copy of this Lease (or any Lease-related document). Landlord shall not release to any third party any non-public financial information or non-public information about Tenant's ownership structure that Tenant gives Landlord. Notwithstanding the foregoing, confidential information under this Section may be released by Landlord or Tenant under the following circumstances: (x) if required by Applicable Laws or in any judicial proceeding; provided that the releasing party has given the other party reasonable notice of such requirement, if feasible, (y) to a party's attorneys, accountants, brokers, lenders, potential lenders, investors, potential investors and other bona fide consultants or advisers (with respect to this Lease only); provided such third parties agree to be bound by this Section or (z) to bona fide prospective assignees or subtenants of this Lease; provided they agree in writing to be bound by this Section.

39. Notices. Except as otherwise stated in this Lease, any notice, consent, demand, invoice, statement or other communication required or permitted to be given hereunder shall be in writing and shall be given by (a) personal delivery or (b) overnight delivery with a reputable international overnight delivery service, such as FedEx. Any such notice, consent, demand, invoice, statement or other communication shall be deemed delivered (y) upon receipt, if given in accordance with Subsection 39(a); or (z) one (1) business day after deposit with a reputable international overnight delivery service, if given if given in accordance with Subsection 39(b). Except as otherwise stated in this Lease, any notice, consent, demand, invoice, statement or other communication required or permitted to be given pursuant to this Lease shall be addressed to Tenant at the Premises, or to Landlord or Tenant at the addresses shown in Sections 2.9 and 2.10 or 2.11, respectively. Either party may, by notice to the other given pursuant to this Section,

specify additional or different addresses for notice purposes. Notices may be given by an agent on behalf of Landlord or Tenant, and with respect to any agent of Tenant, Tenant shall first notify Landlord in writing that such agent is the authorized agent of Tenant.

40. Miscellaneous.

40.1. Landlord reserves the right to change the name of the Building or the Project in its sole discretion.

40.2. To induce Landlord to enter into this Lease, Tenant agrees that it shall promptly furnish to Landlord, from time to time, upon Landlord's written request, the most recent year-end consolidated financial statements reflecting Tenant's current financial condition audited by a nationally recognized accounting firm (except if the named Tenant under this Lease is not the ultimate parent company, such financial statements shall be unconsolidated financial statements of Tenant). Tenant shall, within ninety (90) days after the end of Tenant's financial year, furnish Landlord with a certified copy of Tenant's year-end consolidated financial statements for the previous year certified by Tenant's chief financial officer; provided, however, if the named Tenant under this Lease is not the ultimate parent company, then such required financial statements shall be unconsolidated financial statements of Tenant. Additionally, Tenant shall, within one hundred eighty (180) days after the end of Tenant's financial year, furnish Landlord with Tenant's year-end consolidated financial statements audited by a nationally recognized accounting firm; provided, however, if the named Tenant under this Lease is not the ultimate parent company, then such required financial statements shall be unconsolidated financial statements of Tenant. Tenant represents and warrants that all financial statements, records and information furnished by Tenant to Landlord in connection with this Lease are true, correct and complete in all respects. If audited financials are not otherwise prepared, unaudited financials complying with generally accepted accounting principles and certified by the chief financial officer of Tenant as true, correct and complete in all respects shall suffice for purposes of this Section. The provisions of this Section shall not apply at any time while Tenant is a corporation whose shares are traded on any nationally recognized stock exchange.

40.3. Submission of this instrument for examination or signature by Tenant does not constitute a reservation of or option for a lease, and shall not be effective as a lease or otherwise until execution by and delivery to both Landlord and Tenant.

40.4. The terms of this Lease are intended by the parties as a final, complete and exclusive expression of their agreement with respect to the terms that are included herein, and may not be contradicted or supplemented by evidence of any other prior or contemporaneous agreement.

40.5. Upon the request of either Landlord or Tenant, the parties shall execute a document in recordable form containing only such information as is necessary to constitute a Notice of Lease under Massachusetts law. All costs of preparing and recording such notice shall be borne by the requesting party. Within ten (10) days after receipt of written request from Landlord after the expiration or earlier termination of this Lease, Tenant shall execute a termination of any Notice of Lease recorded with respect hereto. Neither party shall record this Lease.

40.6. Where applicable in this Lease, the singular includes the plural and the masculine or neuter includes the masculine, feminine and neuter. The words "include," "includes," "included" and "including" mean "'include,' etc., without limitation." The word "shall" is mandatory and the word "may" is permissive. The section headings of this Lease are not a part of this Lease and shall have no effect upon the construction or interpretation of any part of this Lease. Landlord and Tenant have each participated in the drafting and negotiation of this Lease, and the language in all parts of this Lease shall be in all cases construed as a whole according to its fair meaning and not strictly for or against either Landlord or Tenant.

40.7. Except as otherwise expressly set forth in this Lease, each party shall pay its own costs and expenses incurred in connection with this Lease and such party's performance under this Lease; provided that, if either party commences an action, proceeding, demand, claim, action, cause of action or suit against the other party arising out of or in connection with this Lease, then the substantially prevailing party shall be reimbursed by the other party for all reasonable costs and expenses, including reasonable attorneys' fees and expenses, incurred by the substantially prevailing party in such action, proceeding, demand, claim, action, cause of action or suit, and in any appeal in connection therewith (regardless of whether the applicable action, proceeding, demand, claim, action, cause of action, suit or appeal is voluntarily withdrawn or dismissed).

40.8. Time is of the essence with respect to the performance of every provision of this Lease.

40.9. Each provision of this Lease performable by Tenant shall be deemed both a covenant and a condition.

40.10. Notwithstanding anything to the contrary contained in this Lease, Tenant's obligations under this Lease are independent and shall not be conditioned upon performance by Landlord.

40.11. Whenever consent or approval of either party is required, that party shall not unreasonably withhold, condition or delay such consent or approval, except as may be expressly set forth to the contrary.

40.12. Any provision of this Lease that shall prove to be invalid, void or illegal shall in no way affect, impair or invalidate any other provision hereof, and all other provisions of this Lease shall remain in full force and effect and shall be interpreted as if the invalid, void or illegal provision did not exist.

40.13. Each of the covenants, conditions and agreements herein contained shall inure to the benefit of and shall apply to and be binding upon the parties hereto and their respective heirs; legatees; devisees; executors; administrators; and permitted successors and assigns. This Lease is for the sole benefit of the parties and their respective heirs, legatees, devisees, executors, administrators and permitted successors and assigns, and nothing in this Lease shall give or be construed to give any other person or entity any legal or equitable rights. Nothing in this Section shall in any way alter the provisions of this Lease restricting assignment or subletting.

40.14. This Lease shall be governed by, construed and enforced in accordance with the laws of the state in which the Premises are located, without regard to such state's conflict of law principles.

40.15. Each party hereto guarantees, warrants and represents that the individual or individuals signing this Lease have the power, authority and legal capacity to sign this Lease on behalf of and to bind all entities, corporations, partnerships, limited liability companies, joint venturers or other organizations and entities on whose behalf such individual or individuals have signed.

40.16. This Lease may be executed in one or more counterparts, each of which, when taken together, shall constitute one and the same document. The parties acknowledge and agree that this Lease may be executed via .pdf format (including computer-scanned or other electronic reproduction of the actual signatures) and that delivery of a signature by electronic or physical means shall be effective to the same extent as delivery of an original signature. Notwithstanding the foregoing, originally signed documents shall be provided upon either party's request.

40.17. No provision of this Lease may be modified, amended or supplemented except by an agreement in writing signed by Landlord and Tenant.

40.18. No waiver of any term, covenant or condition of this Lease shall be binding upon Landlord unless executed in writing by Landlord. The waiver by Landlord of any breach or default of any term, covenant or condition contained in this Lease shall not be deemed to be a waiver of any preceding or subsequent breach or default of such term, covenant or condition or any other term, covenant or condition of this Lease.

40.19. To the extent permitted by Applicable Laws, the parties waive trial by jury in any action, proceeding or counterclaim brought by the other party hereto related to matters arising out of or in any way connected with this Lease; the relationship between Landlord and Tenant; Tenant's use or occupancy of the Premises; or any claim of injury or damage related to this Lease or the Premises.

41. Rooftop Installation Area.

41.1. Tenant may use the portion of the Building identified as a "Rooftop Installation Area" on Exhibit A attached hereto (the "Rooftop Installation Area") solely to operate, maintain, repair and replace rooftop antennae, mechanical equipment, communications antennas, a generator, and other equipment installed by Tenant in the Rooftop Installation Area in accordance with this Article ("Tenant's Rooftop Equipment"). Tenant's Rooftop Equipment shall be only for Tenant's use of the Premises for the Permitted Use.

41.2. Tenant shall install Tenant's Rooftop Equipment at its sole cost and expense, at such times and in such manner as Landlord may reasonably designate, and in accordance with this Article and the applicable provisions of this Lease regarding Alterations. Tenant's Rooftop Equipment and the installation thereof shall be subject to Landlord's prior written approval, which approval shall not be unreasonably withheld, delayed or conditioned. Among other

reasons, Landlord may withhold approval if the installation or operation of Tenant's Rooftop Equipment could reasonably be expected to damage the structural integrity of the Building or to transmit vibrations or noise or cause other adverse effects beyond the Premises to an extent not customary in first class laboratory buildings, unless Tenant implements measures that are acceptable to Landlord in its reasonable discretion to avoid any such damage or transmission.

41.3. Tenant shall comply with any roof or roof-related warranties. Tenant shall obtain a letter from Landlord's roofing contractor within thirty (30) days after completion of any Tenant work on the rooftop stating that such work did not affect any such warranties. Tenant, at its sole cost and expense, shall inspect the Rooftop Installation Area at least annually, and correct any loose bolts, fittings or other appurtenances and repair any damage to the roof arising from the installation or operation of Tenant's Rooftop Equipment. Tenant shall not permit the installation, maintenance or operation of Tenant's Rooftop Equipment to violate any Applicable Laws or constitute a nuisance. Tenant shall pay Landlord within thirty (30) days after demand (a) all applicable taxes, charges, fees or impositions imposed on Landlord by Governmental Authorities as the result of Tenant's use of the Rooftop Installation Areas in excess of those for which Landlord would otherwise be responsible for the use or installation of Tenant's Rooftop Equipment and (b) the amount of any increase in Landlord's insurance premiums as a result of the installation of Tenant's Rooftop Equipment. Upon Tenant's written request to Landlord, Landlord shall use commercially reasonable efforts to cause other tenants to remedy any interference in the operation of Tenant's Rooftop Equipment arising from any such tenants' equipment installed after the applicable piece of Tenant's Rooftop Equipment; provided, however, that Landlord shall not be required to request that such tenants waive their rights under their respective leases.

41.4. If Tenant's Equipment (a) causes physical damage to the structural integrity of the Building, (b) interferes with any telecommunications, mechanical or other systems located at or near or servicing the Building or the Project that were installed prior to the installation of Tenant's Rooftop Equipment, (c) interferes with any other service provided to other tenants in the Building or the Project by rooftop or penthouse installations that were installed prior to the installation of Tenant's Rooftop Equipment or (d) interferes with any other tenant's business, in each case in excess of that permissible under Federal Communications Commission regulations, then Tenant shall cooperate with Landlord to determine the source of the damage or interference and promptly repair such damage and eliminate such interference, in each case at Tenant's sole cost and expense, within ten (10) business days after receipt of notice of such damage or interference (which notice may be oral; provided that Landlord also delivers to Tenant written notice of such damage or interference within twenty-four (24) hours after providing oral notice). Notwithstanding such foregoing 10-business day cure period, if Tenant's Rooftop Equipment is causing damage to the Building or the Project or another tenant's equipment, then Tenant, upon receipt of notice from Landlord, shall immediately cease using Tenant's Rooftop Equipment and shall immediately commence to repair any such damage in consultation with, and after approval from, Landlord. After any such damage has been repaired and Tenant's Rooftop Equipment modified to prevent further damage, Tenant may re-commence use of Tenant's Rooftop Equipment.

41.5. Landlord reserves the right to cause Tenant to relocate Tenant's Rooftop Equipment to comparably functional space on the roof or in the penthouse of the Building by giving Tenant prior written notice thereof. Landlord agrees to pay the reasonable costs thereof. Tenant shall arrange for the relocation of Tenant's Rooftop Equipment within sixty (60) days after receipt of Landlord's notification of such relocation. In the event Tenant fails to arrange for relocation within such sixty (60)-day period, Landlord shall have the right to arrange for the relocation of Tenant's Rooftop Equipment in a manner that does not unnecessarily interrupt or interfere with Tenant's use of the Premises for the Permitted Use.

42. Option to Extend Term. Tenant shall have one (1) option (the "Option") to extend the Term by five (5) years as to the entire Premises upon the following terms and conditions. Any extension of the Term pursuant to the Option shall be on all the same terms and conditions as this Lease, except as follows:

42.1. Base Rent at the commencement of the Option term shall equal the then-current fair market value for comparable office and laboratory space in the East Cambridge submarket of comparable age, quality, level of finish and proximity to amenities and public transit, and containing the systems and improvements present in the Premises as of the date that Tenant gives Landlord written notice of Tenant's election to exercise the Option, including the then-current fair market value annual escalations of Base Rent ("FMV"). Tenant may, no more than thirteen (13) months prior to the date the Term is then scheduled to expire, request Landlord's estimate of the FMV for the Option term. Landlord shall, within fifteen (15) days after receipt of such request, give Tenant a written proposal of such FMV. If Tenant gives written notice to exercise the Option, such notice shall specify whether Tenant accepts Landlord's proposed estimate of FMV. If Tenant does not accept the FMV, then the parties shall endeavor to agree upon the FMV, taking into account all relevant factors, including (v) the size of the Premises, (w) the length of the Option term, (x) rent in comparable buildings in the relevant submarket, including concessions offered to new tenants, such as free rent, tenant improvement allowances and moving allowances, (y) Tenant's creditworthiness and (z) the quality and location of the Building and the Project. In the event that the parties are unable to agree upon the FMV within thirty (30) days after Tenant notifies Landlord that Tenant is exercising the Option, then either party may request that the same be determined as follows: a senior officer of a nationally recognized leasing brokerage firm with local knowledge of the East Cambridge laboratory/research and development leasing submarket (the "Baseball Arbitrator") shall be selected and paid for jointly by Landlord and Tenant. If Landlord and Tenant are unable to agree upon the Baseball Arbitrator, then the same shall be designated by the local chapter of the Judicial Arbitration and Mediation Services or any successor organization thereto (the "JAMS"). The Baseball Arbitrator selected by the parties or designated by JAMS shall (y) have at least ten (10) years' experience in the leasing of laboratory/research and development space in the East Cambridge submarket and (z) not have been employed or retained by either Landlord or Tenant or any affiliate of either for a period of at least ten (10) years prior to appointment pursuant hereto. Each of Landlord and Tenant shall submit to the Baseball Arbitrator and to the other party its determination of the FMV. The Baseball Arbitrator shall grant to Landlord and Tenant a hearing and the right to submit evidence. The Baseball Arbitrator shall determine which of the two (2) FMV determinations more closely represents the actual FMV. The arbitrator may not select any other FMV for the Premises other than one submitted by Landlord or Tenant. The FMV selected by the Baseball Arbitrator shall be binding upon Landlord and Tenant and shall serve as the basis

for determination of Base Rent payable for the Option term. If, as of the commencement date of the Option term, the amount of Base Rent payable during the Option term shall not have been determined, then, pending such determination, Tenant shall pay Base Rent equal to the Base Rent payable with respect to the last year of the then-current Term. After the final determination of Base Rent payable for the Option term, the parties shall promptly execute a written amendment to this Lease specifying the amount of Base Rent to be paid during the Option term. Any failure of the parties to execute such amendment shall not affect the validity of the FMV determined pursuant to this Section.

42.2. The Option is not assignable separate and apart from this Lease.

42.3. The Option is conditional upon Tenant giving Landlord written notice of its election to exercise the Option at least twelve (12) months prior to the end of the expiration of the then-current Term. Time shall be of the essence as to Tenant's exercise of the Option. Tenant assumes full responsibility for maintaining a record of the deadlines to exercise the Option. Tenant acknowledges that it would be inequitable to require Landlord to accept any exercise of the Option after the date provided for in this Section.

42.4. Notwithstanding anything contained in this Article to the contrary, Tenant shall not have the right to exercise the Option:

(a) During the time commencing from the date Landlord delivers to Tenant a written notice that Tenant is in default under any provisions of this Lease and continuing until Tenant has cured the specified default;

(b) At any time after any Default as described in Article 31 of the Lease (provided, however, that, for purposes of this Section 42.4(b), Landlord shall not be required to provide Tenant with notice of such Default other than any notice from Landlord that may be required under Article 31 of this Lease) and continuing until Tenant cures any such Default, if such Default is susceptible to being cured;

(c) At the time Tenant exercises its Option and as of the last day of the initial Term, Tenant has not (i) subleased any Rentable Area of the Premises, and (ii) assigned this Lease, except in connection with an Exempt Transfer;

(d) In the event that Tenant has defaulted in the performance of its obligation to pay Base Rent, Operating Expenses or the Property Management Fee two (2) or more times during the twelve (12)-month period immediately prior to the date that Tenant intends to exercise the Option, whether or not Tenant has cured such defaults; or

(e) In the event that Tenant has been in Default of any material non-monetary obligations under this Lease or its obligation to pay Additional Rent (excluding Operating Expenses and the Property Management Fee) two (2) or more times during the twelve (12)-month period immediately prior to the date that Tenant intends to exercise the Option, whether or not Tenant has cured such defaults.

42.5. The period of time within which Tenant may exercise the Option shall not be extended or enlarged by reason of Tenant's inability to exercise such Option because of the provisions of Section 42.4.

42.6. All of Tenant's rights under the provisions of the Option shall terminate and be of no further force or effect even after Tenant's due and timely exercise of the Option if, after such exercise, but prior to the commencement date of the new term, (a) Tenant fails to pay to Landlord a monetary obligation of Tenant for a period of twenty (20) days after written notice from Landlord to Tenant, (b) Tenant fails to commence to cure a default (other than a monetary default) within thirty (30) days after the date Landlord gives notice to Tenant of such default or (c) Tenant has been in Default under this Lease two (2) or more times and a service or late charge under Section 31.1 has become payable for any such Default, whether or not Tenant has cured such Defaults.

43. Early Termination Provided that Tenant has executed a lease with Landlord or an affiliate of Landlord for premises totaling more than 60,000 square feet of Rentable Area in another building owned by an affiliate of Landlord, with an initial term of ten (10) years or more (the "Expansion Lease"), as of the date the Termination Option Notice (as hereafter defined) is delivered and the Termination Date (as hereafter defined) occurs, then Tenant shall have the one-time option to terminate this Lease with respect to the entire Premises (the "Termination Option") by providing Landlord with written notice thereof (the "Termination Option Notice") on or about the date that is ten (10) days after the execution date of the Expansion Lease. Tenant shall set forth in the Termination Option Notice the date that this Lease shall terminate (the "Termination Date"). If Tenant fails to timely deliver to Landlord the Termination Option Notice, then the Termination Option shall automatically terminate and be of no further force or effect. If Tenant timely delivers to Landlord the Termination Option Notice, then Tenant shall surrender the Premises to Landlord on or before the Termination Date in accordance with all of the terms and conditions of the Lease. If Tenant does not so surrender the Premises in accordance with all of the terms and conditions of the Lease on or before the Termination Date, then Tenant, pursuant to Article 27 of this Lease, shall become a tenant at sufferance until the actual date that Tenant surrenders the Premises to Landlord in accordance with the terms and conditions of this Lease. If Tenant timely delivers to Landlord the Termination Option Notice, then this Lease shall terminate on the Termination Date and shall thereafter be of no further force or effect, except for those provisions that, by their express terms, survive the expiration or earlier termination thereof. Notwithstanding anything in this Section to the contrary, Tenant shall not be permitted to exercise the Termination Option during any period of time during which Tenant is in default of its obligations under the Lease. Any attempted exercise of the Termination Option during a period of time in which Tenant is in default shall be void and of no force or effect. The Termination Option is personal to Synlogic, Inc., and may not be exercised by any assignee, sublessee or transferee of this Lease, unless Landlord expressly agrees that the Termination Option may be transferred to any such assignee, sublessee or transferee, which agreement Landlord may grant or withhold in its sole discretion.

44. Ground Lease. Ground Lessor and Landlord shall execute and deliver to Tenant a recognition agreement providing that Ground Lessor will recognize this Lease and not disturb Tenant's possession of the Premises and recognize this Lease and all of Tenant's rights hereunder, in the form of the Non-Disturbance and Attornment Agreement attached hereto as Exhibit J.

[REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the parties hereto have executed this Lease as a sealed Massachusetts instrument as of the date first above written.

LANDLORD:

BMR-ROGERS STREET LLC,
a Delaware limited liability company

By: _____
Name: _____
Title: _____

TENANT:

SYNLOGIC, INC.,
a Delaware corporation

By: _____
Name: _____
Title: _____

EXHIBIT A

PREMISES

EXHIBIT A-1

PROPERTY

EXHIBIT B

WORK LETTER

This Work Letter (this "Work Letter") is made and entered into as of the [____] day of [_____], 2017, by and between BMR-ROGERS STREET LLC, a Delaware limited liability company("Landlord"), and SYNLOGIC, INC., a Delaware corporation ("Tenant"), and is attached to and made a part of that certain Lease dated as of [_____], 2017 (as the same may be amended, amended and restated, supplemented or otherwise modified from time to time, the "Lease"), by and between Landlord and Tenant for the Premises located at 301 Binney Street in Cambridge, Massachusetts. All capitalized terms used but not otherwise defined herein shall have the meanings given them in the Lease.

1. General Requirements.

1.1. Authorized Representatives.

(a) Landlord designates, as Landlord's authorized representative ("Landlord's Authorized Representative"), (i) Salvatore Zinno as the person authorized to initial plans, drawings, approvals and to sign change orders pursuant to this Work Letter and (ii) an officer of Landlord as the person authorized to sign any amendments to this Work Letter or the Lease. Tenant shall not be obligated to respond to or act upon any such item until such item has been initialed or signed (as applicable) by the appropriate Landlord's Authorized Representative. Landlord may change either Landlord's Authorized Representative upon one (1) business day's prior written notice to Tenant.

(b) Tenant designates [_____] ("Tenant's Authorized Representative") as the person authorized to initial and sign all plans, drawings, change orders and approvals pursuant to this Work Letter. Landlord shall not be obligated to respond to or act upon any such item until such item has been initialed or signed (as applicable) by Tenant's Authorized Representative. Tenant may change Tenant's Authorized Representative upon one (1) business day's prior written notice to Landlord.

1.2. Schedule. The schedule for design and development of the Tenant Improvements, including the time periods for preparation and review of construction documents, approvals and performance, shall be in accordance with the scheduled attached hereto as Schedule 1 (the "Schedule"). The Schedule shall be subject to adjustment as mutually agreed upon in writing by the parties, or as otherwise provided in this Work Letter.

1.3. Landlord's Architects, Contractors and Consultants. The architect, engineering consultants, design team, general contractor and subcontractors responsible for the construction of the Tenant Improvements shall be selected by Landlord. Landlord hereby selects R.E. Dinneen as the architect and The Richmond Group as the general contractor.

2. Tenant Improvements. All Tenant Improvements shall be performed by Landlord's contractor, at Tenant's sole cost and expense (subject to Landlord's obligations with respect to any portion of the TI Allowance used by Landlord in completing the Tenant Improvements) and

in substantial accordance with the Approved Plans (as defined below), the Lease and this Work Letter. To the extent that the total projected cost of the Tenant Improvements (as projected by Landlord) exceeds the TI Allowance (such excess, the "Excess TI Costs"), Tenant shall advance to Landlord any Excess TI Costs within ten (10) days after receipt of an invoice therefor, but in any case before Landlord commences the Tenant Improvements. If Landlord is delayed in commencing the Tenant Improvements due to Tenant's failure to timely pay the Excess TI Costs to Landlord, Landlord shall be entitled to a day-for-day extension to achieve Substantial Completion of the Tenant Improvements for the period of such delay. If the actual Excess TI Costs are less than the Excess TI Costs paid by Tenant to Landlord, Landlord shall credit Tenant with the overage paid by Tenant against Tenant's Rent obligations, beginning after Landlord has completed the final accounting for the Tenant Improvements. If the cost of the Tenant Improvements (as projected by Landlord) increases over Landlord's initial projection, then Landlord may notify Tenant and Tenant shall deposit any additional Excess TI Costs with Landlord in the same way that Tenant deposited the initial Excess TI Costs. If Tenant fails to pay, or is late in paying, any sum due to Landlord under this Work Letter, then Landlord shall have all of the rights and remedies set forth in the Lease for nonpayment of Rent (including the right to interest and the right to assess a late charge), and for purposes of any litigation instituted with regard to such amounts the same shall be considered Rent. All material and equipment furnished by Landlord or its contractors as the Tenant Improvements shall be new or "like new," and the Tenant Improvements shall be performed in a first-class, workmanlike manner.

2.1. Schematic Design Plans. Landlord and Tenant hereby approve the plans and specifications for the Tenant Improvements (the "Schematic Design Plans") and the Basis of Design, each attached to this Work Letter as Schedule 2.

2.2. Construction Plans. Landlord shall prepare final plans and specifications for the Tenant Improvements that (a) are consistent with and are logical evolutions of the Schematic Design Plans and the Basis of Design and (b) incorporate any other Tenant-requested (and Landlord-approved) Changes (as defined below). As soon as such final plans and specifications ("Construction Plans") are completed, Landlord shall deliver the same to Tenant for Tenant's approval, which approval shall not be unreasonably withheld, conditioned or delayed. Such Construction Plans shall be approved or disapproved by Tenant within five (5) business days after delivery to Tenant. Tenant's failure to respond within such five (5) business day period shall be deemed approval by Tenant. If the Construction Plans are disapproved by Tenant, then Tenant shall notify Landlord in writing of its reasonable objections to such Construction Plans, and the parties shall confer and negotiate in good faith to reach agreement on the Construction Plans. Promptly after the Construction Plans are approved by Landlord and Tenant, two (2) copies of such Construction Plans shall be initialed and dated by Landlord and Tenant, and Landlord shall promptly submit such Construction Plans to all appropriate Governmental Authorities for approval. The Construction Plans so approved, and all change orders specifically permitted by this Work Letter, are referred to herein as the "Approved Plans." In the event that the Construction Plans are not approved by Tenant within the initial five (5) business day period specified in this Section 2.2, then, notwithstanding anything in the Lease or this Work Letter to the contrary, it shall be deemed a delay by Tenant, and in accordance with Section 4.2 of the Lease, the Term Commencement Date shall be the date that the Term Commencement Date would have occurred but for such delay.

2.3. Changes to the Tenant Improvements. Any changes to the Approved Plans (each, a "Change") shall be requested and instituted in accordance with the provisions of this Article 2 and shall be subject to the written approval of the non-requesting party in accordance with this Work Letter.

(a) Change Request. Either Landlord or Tenant may request Changes after Tenant approves the Approved Plans by notifying the other party thereof in writing in substantially the same form as the AIA standard change order form (a "Change Request"), which Change Request shall detail the nature and extent of any requested Changes, including (a) the Change, (b) the party required to perform the Change and (c) any modification of the Approved Plans and the Schedule, as applicable, necessitated by the Change. If the nature of a Change requires revisions to the Approved Plans, then the requesting party shall be solely responsible for the cost and expense of such revisions and any increases in the cost of the Tenant Improvements as a result of such Change. Change Requests shall be signed by the requesting party's Authorized Representative.

(b) Approval of Changes. All Change Requests shall be subject to the other party's prior written approval, which approval shall not be unreasonably withheld, conditioned or delayed. The non-requesting party shall have five (5) business days after receipt of a Change Request to notify the requesting party in writing of the non-requesting party's decision either to approve or object to the Change Request. The non-requesting party's failure to respond within such five (5) business day period shall be deemed approval by the non-requesting party.

3. Requests for Consent. Except as otherwise provided in this Work Letter, Tenant shall respond to all requests for consents, approvals or directions made by Landlord pursuant to this Work Letter within five (5) business days following Tenant's receipt of such request. Tenant's failure to respond within such five (5) business day period shall be deemed approval by Tenant.

4. TI Allowance.

4.1. Application of TI Allowance. Landlord shall contribute, in the following order, the TI Allowance and any Excess TI Costs advanced by Tenant to Landlord toward the costs and expenses incurred in connection with the performance of the Tenant Improvements, in accordance with Article 4 of the Lease. If the entire TI Allowance is not applied toward or reserved for the costs of the Tenant Improvements, then Tenant shall not be entitled to a credit of such unused portion of the TI Allowance. If the entire Excess TI Costs advanced by Tenant to Landlord are not applied toward the costs of the Tenant Improvements, then Landlord shall promptly return such excess to Tenant following completion of the Tenant Improvements. Tenant may apply the TI Allowance for the payment of construction and other costs in accordance with the terms and provisions of the Lease.

4.2. Approval of Budget for the Tenant Improvements. The parties agree that the budget for the Tenant Improvements attached hereto as Schedule 3 is a preliminary budget (the "Preliminary Budget"). Landlord anticipates obtaining from its general contractor updated budgets in connection with the Construction Plans, which shall be subject to the review and approval of Landlord and Tenant. Notwithstanding anything to the contrary set forth elsewhere

in this Work Letter or the Lease, Landlord shall not have any obligation to expend any portion of the TI Allowance until Landlord and Tenant shall have approved in writing a final budget for the Tenant Improvements (the "Approved Budget"). Prior to Landlord's approval of the Approved Budget, Tenant shall pay all of the costs and expenses incurred in connection with the Tenant Improvements as they become due. Tenant shall promptly reimburse Landlord for actual costs or expenses relating to the Tenant Improvements that exceed the amount of the TI Allowance.

5. Miscellaneous.

5.1. Incorporation of Lease Provisions. Sections 40.6 through 40.19 of the Lease are incorporated into this Work Letter by reference, and shall apply to this Work Letter in the same way that they apply to the Lease.

5.2. General. Except as otherwise set forth in the Lease or this Work Letter, this Work Letter shall not apply to improvements performed in any additional premises added to the Premises at any time or from time to time, whether by any options under the Lease or otherwise; or to any portion of the Premises or any additions to the Premises in the event of a renewal or extension of the original Term, whether by any options under the Lease or otherwise, unless the Lease or any amendment or supplement to the Lease expressly provides that such additional premises are to be delivered to Tenant in the same condition as the initial Premises.

[REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, Landlord and Tenant have executed this Work Letter as a sealed Massachusetts instrument to be effective on the date first above written.

LANDLORD:

BMR-ROGERS STREET LLC,
a Delaware limited liability company
By: _____
Name: _____
Title: _____

TENANT:

SYNLOGIC, INC.,
a Delaware corporation

By: _____
Name: _____
Title: _____

EXHIBIT B-1

TENANT WORK INSURANCE SCHEDULE

Tenant shall be responsible for requiring all of Tenant contractors doing construction or renovation work to purchase and maintain such insurance as shall protect it from the claims set forth below which may arise out of or result from any Tenant Work whether such Tenant Work is completed by Tenant or by any Tenant contractors or by any person directly or indirectly employed by Tenant or any Tenant contractors, or by any person for whose acts Tenant or any Tenant contractors may be liable:

1. Claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Tenant Work to be performed.

2. Claims for damages because of bodily injury, occupational sickness or disease, or death of employees under any applicable employer's liability law.

3. Claims for damages because of bodily injury, or death of any person other than Tenant's or any Tenant contractors' employees.

4. Claims for damages insured by usual personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by Tenant or any Tenant contractors or (b) by any other person.

5. Claims for damages, other than to the Tenant Work itself, because of injury to or destruction of tangible property, including loss of use therefrom.

6. Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

Tenant contractors' Commercial General Liability Insurance shall include premises/operations (including explosion, collapse and underground coverage if such Tenant Work involves any underground work), elevators, independent contractors, products and completed operations, and blanket contractual liability on all written contracts, all including broad form property damage coverage.

Tenant contractors' Commercial General, Automobile, Employers and Umbrella Liability Insurance shall be written for not less than limits of liability as follows:

a. Commercial General Liability: Bodily Injury and Property Damage	Commercially reasonable amounts, but in any event no less than $1,000,000 per occurrence and $2,000,000 general aggregate, with $2,000,000 products and completed operations aggregate.

b. Commercial Automobile Liability:	$1,000,000 per accident
Bodily Injury and Property Damage	
c. Employer's Liability:	
Each Accident	$500,000
Disease – Policy Limit	$500,000
Disease – Each Employee	$500,000
d.Umbrella Liability:	Commercially reasonable amounts (excess of coverages a, b and c above), but in any event no less than $5,000,000 per occurrence / aggregate.
Bodily Injury and Property Damage	

All subcontractors for Tenant contractors shall carry the same coverages and limits as specified above, unless different limits are reasonably approved by Landlord. The foregoing policies shall contain a provision that coverages afforded under the policies shall not be canceled or not renewed until at least thirty (30) days' prior written notice has been given to the Landlord. Certificates of insurance including required endorsements showing such coverages to be in force shall be filed with Landlord prior to the commencement of any Tenant Work and prior to each renewal. Coverage for completed operations must be maintained for the lesser of ten (10) years and the applicable statue of repose following completion of the Tenant Work, and certificates evidencing this coverage must be provided to Landlord. The minimum A.M. Best's rating of each insurer shall be A- VII. Landlord and its mortgagees shall be named as an additional insureds under Tenant contractors' Commercial General Liability, Commercial Automobile Liability and Umbrella Liability Insurance policies as respects liability arising from work or operations performed, or ownership, maintenance or use of any autos, by or on behalf of such contractors. Each contractor and its insurers shall provide waivers of subrogation with respect to any claims covered or that should have been covered by valid and collectible workers' compensation or employer's liability insurance, including any deductibles or self-insurance maintained thereunder.

If any contractor's work involves the handling or removal of asbestos (as determined by Landlord in its sole and absolute discretion), such contractor shall also carry Pollution Legal Liability insurance. Such coverage shall include bodily injury, sickness, disease, death or mental anguish or shock sustained by any person; property damage, including physical injury to or destruction of tangible property (including the resulting loss of use thereof), clean-up costs and the loss of use of tangible property that has not been physically injured or destroyed; and defense costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such damages. Coverage shall apply to both sudden and non-sudden pollution conditions including the discharge, dispersal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants into or upon land, the atmosphere or any watercourse or body of water. Claims-made coverage is permitted, provided the policy retroactive date is continuously maintained prior to the Term Commencement Date, and coverage is continuously maintained during all periods in which Tenant occupies the Premises. Coverage shall be maintained with limits of not less than $1,000,000 per incident with a $2,000,000 policy aggregate.

SCHEDULE 1 TO WORK LETTER

SCHEDULE

(see attached)

SCHEDULE 2 TO WORK LETTER

SCHEMATIC DESIGN PLANS AND BASIS OF DESIGN

(see attached)

SCHEDULE 3 TO WORK LETTER

PRELIMINARY BUDGET

(see attached)

EXHIBIT C

ACKNOWLEDGEMENT OF TERM COMMENCEMENT DATE
AND TERM EXPIRATION DATE

THIS ACKNOWLEDGEMENT OF TERM COMMENCEMENT DATE AND TERM EXPIRATION DATE is entered into as of [_____], 20[__], with reference to that certain Lease (the "Lease") dated as of [_____], 2017, by SYNLOGIC, INC., a Delaware corporation ("Tenant"), in favor of BMR-ROGERS STREET LLC, a Delaware limited liability company ("Landlord"). All capitalized terms used herein without definition shall have the meanings ascribed to them in the Lease.

Tenant hereby confirms the following:

1. Tenant accepted possession of the Premises for use in accordance with the Permitted Use on [_____], 20[__]. Tenant first occupied the Premises for the Permitted Use on [_____], 20[__].

2. The Premises are in good order, condition and repair.

3. The Tenant Improvements are Substantially Complete.

4. All conditions of the Lease to be performed by Landlord as a condition to the full effectiveness of the Lease have been satisfied, and Landlord has fulfilled all of its duties in the nature of inducements offered to Tenant to lease the Premises, except as follows: _____

5. In accordance with the provisions of Article 4 of the Lease, the Term Commencement Date is [_____], 20[__], and, unless the Lease is terminated prior to the Term Expiration Date pursuant to its terms, the Term Expiration Date shall be [_____], 20[__].

6. The Lease is in full force and effect, and the same represents the entire agreement between Landlord and Tenant concerning the Premises.

7. Tenant has no existing defenses against the enforcement of the Lease by Landlord, and there exist no offsets or credits against Rent owed or to be owed by Tenant.

8. The obligation to pay Rent is presently in effect and all Rent obligations on the part of Tenant under the Lease commenced to accrue on [_____], 20[__], with Base Rent payable on the dates and amounts set forth in the chart below, subject to annual adjustment under Article 8 of the Lease:

Dates	Approximate Square Feet of Rentable Area*	Base Rent per Square Foot of Rentable Area	Monthly Base Rent*	Annual Base Rent*
Rent Commencement Date- The day immediately prior to the first (1st) annual anniversary of the Rent Commencement Date	41,346	$76.00 annually	$261,858.00	$3,142,296.00

9. The undersigned Tenant has not made any prior assignment, transfer, hypothecation or pledge of the Lease or of the rents thereunder or sublease of the Premises or any portion thereof.

[REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, Tenant has executed this Acknowledgment of Term Commencement Date and Term Expiration Date as of the date first written above.

TENANT:

SYNLOGIC, INC.,
a Delaware corporation

By: _____
Name: _____
Title: _____

EXHIBIT D

INTENTIONALLY OMITTED

EXHIBIT E

[FORM OF LETTER OF CREDIT

[On letterhead or L/C letterhead of Issuer]

LETTER OF CREDIT

Date: _____, 20__

BMR-ROGERS STREET LLC (the "Beneficiary")

_____
_____
Attention: _____
L/C. No.: _____
Loan No. : _____

Ladies and Gentlemen:

We establish in favor of Beneficiary our irrevocable and unconditional Letter of Credit numbered as identified above (the "L/C") for an aggregate amount of $1,064,000.00, expiring at __:00 p.m. on _____ or, if such day is not a Banking Day, then the next succeeding Banking Day (such date, as extended from time to time, the "Expiry Date"). "Banking Day" means a weekday except a weekday when commercial banks in _____ are authorized or required to close.

We authorize Beneficiary to draw on us (the "Issuer") for the account of _____ (the "Account Party"), under the terms and conditions of this L/C.

Funds under this L/C are available by presenting the following documentation (the "Drawing Documentation"): (a) the original L/C and (b) a sight draft substantially in the form of Attachment 1, with blanks filled in and bracketed items provided as appropriate. No other evidence of authority, certificate, or documentation is required.

Drawing Documentation must be presented at Issuer's office at _____ on or before the Expiry Date by personal presentation, courier or messenger service, or fax. Presentation by fax shall be effective upon electronic confirmation of transmission as evidenced by a printed report from the sender's fax machine. After any fax presentation, but not as a condition to its effectiveness, Beneficiary shall with reasonable promptness deliver the original Drawing Documentation by any other means. Issuer will on request issue a receipt for Drawing Documentation.

We agree, irrevocably, and irrespective of any claim by any other person, to honor drafts drawn under and in conformity with this L/C, within the maximum amount of this L/C, presented to us on or before the Expiry Date, provided we also receive (on or before the Expiry Date) any other Drawing Documentation this L/C requires.

We shall pay this L/C only from our own funds by check or wire transfer, in compliance with the Drawing Documentation.

If Beneficiary presents proper Drawing Documentation to us on or before the Expiry Date, then we shall pay under this L/C at or before the following time (the "Payment Deadline"): (a) if presentment is made at or before noon of any Banking Day, then the close of such Banking Day; and (b) otherwise, the close of the next Banking Day. We waive any right to delay payment beyond the Payment Deadline. If we determine that Drawing Documentation is not proper, then we shall so advise Beneficiary in writing, specifying all grounds for our determination, within one Banking Day after the Payment Deadline.

Partial drawings are permitted. This L/C shall, except to the extent reduced thereby, survive any partial drawings.

We shall have no duty or right to inquire into the validity of or basis for any draw under this L/C or any Drawing Documentation. We waive any defense based on fraud or any claim of fraud.

The Expiry Date shall automatically be extended by one year (but never beyond _____ (the "Outside Date")) unless, on or before the date 90 days before any Expiry Date, we have given Beneficiary notice that the Expiry Date shall not be so extended (a "Nonrenewal Notice"). We shall promptly upon request confirm any extension of the Expiry Date under the preceding sentence by issuing an amendment to this L/C, but such an amendment is not required for the extension to be effective. We need not give any notice of the Outside Date.

Beneficiary may from time to time without charge transfer this L/C, in whole but not in part, to any transferee (the "Transferee"). Issuer shall look solely to Account Party for payment of any fee for any transfer of this L/C. Such payment is not a condition to any such transfer. Beneficiary or Transferee shall consummate such transfer by delivering to Issuer the original of this L/C and a Transfer Notice substantially in the form of Attachment 2, purportedly signed by Beneficiary, and designating Transferee. Issuer shall promptly reissue or amend this L/C in favor of Transferee as Beneficiary. Upon any transfer, all references to Beneficiary shall automatically refer to Transferee, who may then exercise all rights of Beneficiary. Issuer expressly consents to any transfers made from time to time in compliance with this paragraph.

Any notice to Beneficiary shall be in writing and delivered by hand with receipt acknowledged or by overnight delivery service such as FedEx (with proof of delivery) at the above address, or such other address as Beneficiary may specify by written notice to Issuer. A copy of any such notice shall also be delivered, as a condition to the effectiveness of such notice, to: _____ (or such replacement as Beneficiary designates from time to time by written notice).

No amendment that adversely affects Beneficiary shall be effective without Beneficiary's written consent.

This L/C is subject to and incorporates by reference: (a) the International Standby Practices 98 ("ISP 98"); and (b) to the extent not inconsistent with ISP 98, Article 5 of the Uniform Commercial Code of the State of New York.

Very truly yours,

[Issuer Signature]

ATTACHMENT 1 TO EXHIBIT E

FORM OF SIGHT DRAFT

[Beneficiary Letterhead]

TO:

[Name and Address of Issuer]

SIGHT DRAFT

AT SIGHT, pay to the Order of _____, the sum of _____ United States Dollars ($_____). Drawn under [Issuer] Letter of Credit No. _____ dated _____.

[Issuer is hereby directed to pay the proceeds of this Sight Draft solely to the following account: _____.]

[Name and signature block, with signature or purported signature of Beneficiary]

Date: _____

ATTACHMENT 2 TO EXHIBIT E

FORM OF TRANSFER NOTICE

[Beneficiary Letterhead]

TO:

[Name and Address of Issuer] (the "Issuer")

TRANSFER NOTICE

By signing below, the undersigned, Beneficiary (the "Beneficiary") under Issuer's Letter of Credit No. _____ dated _____ (the "L/C"), transfers the L/C to the following transferee (the "Transferee"):

[Transferee Name and Address]

The original L/C is enclosed. Beneficiary directs Issuer to reissue or amend the L/C in favor of Transferee as Beneficiary. Beneficiary represents and warrants that Beneficiary has not transferred, assigned, or encumbered the L/C or any interest in the L/C, which transfer, assignment, or encumbrance remains in effect.

[Name and signature block, with signature or purported signature of Beneficiary]

Date: _____]

EXHIBIT F

RULES AND REGULATIONS

NOTHING IN THESE RULES AND REGULATIONS ("RULES AND REGULATIONS") SHALL SUPPLANT ANY PROVISION OF THE LEASE. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN THESE RULES AND REGULATIONS AND THE LEASE, THE LEASE SHALL PREVAIL.

1. No Tenant Party shall encumber or obstruct the common entrances, lobbies, elevators, sidewalks and stairways of the Building(s) or the Project or use them for any purposes other than ingress or egress to and from the Building(s) or the Project.

2. Except as specifically provided in the Lease, no sign, placard, picture, advertisement, name or notice shall be installed or displayed on any part of the outside of the Premises or the Building without Landlord's prior written consent. Landlord shall have the right to remove, at Tenant's sole cost and expense and without notice, any sign installed or displayed in violation of this rule.

3. If Landlord objects in writing to any curtains, blinds, shades, screens, hanging plants or other similar objects attached to or used in connection with any window or door of the Premises or placed on any windowsill, and (a) such window, door or windowsill is visible from the exterior of the Premises and (b) such curtain, blind, shade, screen, hanging plant or other object is not included in plans approved by Landlord, then Tenant shall promptly remove such curtains, blinds, shades, screens, hanging plants or other similar objects at its sole cost and expense.

4. Deliveries shall be made no earlier than 7 a.m. and no later than 6 p.m., and shall comply with the City of Cambridge Truck Traffic and Noise Ordinance. No deliveries shall be made that impede or interfere with other tenants in or the operation of the Project. Movement of furniture, office equipment or any other large or bulky material(s) through the Common Area shall be restricted to such hours as Landlord may designate and shall be subject to reasonable restrictions that Landlord may impose. Tenant will ensure all overhead loading dock doors are secured after receipt of any delivery. Tenant must accept all deliveries. Building personnel, security or Landlord's third party contractors will not accept any deliveries on behalf of Tenant.

5. Tenant shall not place a load upon any floor of the Premises that exceeds the load per square foot that (a) such floor was designed to carry or (b) is allowed by Applicable Laws. Fixtures and equipment that cause noises or vibrations that may be transmitted to the structure of the Building to such a degree as to be objectionable to other tenants shall be placed and maintained by Tenant, at Tenant's sole cost and expense, on vibration eliminators or other devices sufficient to eliminate such noises and vibrations to levels reasonably acceptable to Landlord and the affected tenants of the Project.

6. Tenant shall not use any method of HVAC other than that shown in the Tenant Improvement plans approved in writing by Landlord.

7. Tenant shall not install any radio, television or other antennae; cell or other communications equipment; or other devices on the roof or exterior walls of the Premises except in accordance with the Lease. Tenant shall not interfere with radio, television or other digital or electronic communications at the Project or elsewhere.

8. Canvassing, peddling, soliciting and distributing handbills or any other written material within, on or around the Project (other than within the Premises) are prohibited. Tenant shall cooperate with Landlord to prevent such activities by any Tenant Party.

9. The loading dock shall be used for all deliveries. All persons parking at the loading dock must adhere to a thirty (30) minute limit when making deliveries. Vehicles left unattended beyond the time limit are subject to towing at the vehicle owner's expense. Landlord shall not be responsible for damage to vehicles, businesses or personnel incurred due to parking or loading dock operations.

10. Except as otherwise permitted under the Lease, Tenant shall not mark, paint, drill into or in any way deface any part of the Building or Premises. No boring, driving of nails or screws, cutting or stringing of wires shall be permitted except with Landlord's prior written consent, which Landlord shall not unreasonably withhold, or as Landlord may direct.

11. Tenant shall only discharge industrial sewage if Tenant, at its sole cost and expense, obtains all necessary permits and licenses therefor, including (without limitation) permits from State and local authorities having jurisdiction thereover.

12. Tenant shall store all of its trash, garbage and Hazardous Materials in receptacles within its Premises or in receptacles designated by Landlord outside of the Premises. Tenant shall not place in any such receptacle any material that cannot be disposed of in the ordinary and customary manner of trash, garbage and Hazardous Materials disposal. Any Hazardous Materials transported through the Common Area shall be held in secondary containment devices. Tenant shall be responsible, at its sole cost and expense, for Tenant's removal of its Hazardous Materials. Tenant is encouraged to participate in the waste removal and recycling program in place at the Project.

13. The Premises shall not be used for lodging or for any improper purpose. No cooking shall be done or permitted in the Premises; provided, however, that Tenant may use (a) equipment approved in accordance with the requirements of insurance policies that Landlord or Tenant is required to purchase and maintain pursuant to the Lease for brewing coffee, tea, hot chocolate and similar beverages, (b) microwave ovens for employees' use and (c) equipment shown on Tenant Improvement plans approved by Landlord; provided, further, that any such equipment and microwave ovens are used in accordance with Applicable Laws.

14. Tenant shall not, without Landlord's prior written consent, use the name of the Project, if any, in connection with or in promoting or advertising Tenant's business except as Tenant's address.

15. Tenant shall comply with all safety, fire protection and evacuation procedures and regulations established by Landlord or any Governmental Authority.

16. Tenant assumes any and all responsibility for protecting the Premises from theft, robbery and pilferage, which responsibility includes keeping doors locked and other means of entry to the Premises closed.

17. Tenant shall not modify any locks to the Premises without Landlord's prior written consent, which consent Landlord shall not unreasonably withhold, condition or delay. Tenant shall furnish Landlord with copies of keys, pass cards or similar devices for locks to the Premises.

18. Tenant shall cooperate and participate in all reasonable security programs affecting the Premises.

19. Tenant shall not permit any animals in the Project, other than for guide animals or for use in laboratory experiments.

20. Bicycles shall not be taken into the Building (including the elevators and stairways of the Building) except into areas designated by Landlord.

21. The water and wash closets and other plumbing fixtures shall not be used for any purposes other than those for which they were constructed, and no sweepings, rubbish, rags or other substances shall be deposited therein.

22. Discharge of industrial sewage shall only be permitted if Tenant, at its sole expense, first obtains all necessary permits and licenses therefor from all applicable Governmental Authorities.

23. Smoking is prohibited at the Project, except in designated outdoor areas, if any.

24. The Project's hours of operation are currently 24 hours a day, seven days a week.

25. Tenant shall comply with all orders, requirements and conditions now or hereafter imposed by Applicable Laws or Landlord ("Waste Regulations") regarding the collection, sorting, separation and recycling of waste products, garbage, refuse and trash generated by Tenant (collectively, "Waste Products"), including (without limitation) the separation of Waste Products into receptacles reasonably approved by Landlord and the removal of such receptacles in accordance with any collection schedules prescribed by Waste Regulations.

26. Tenant, at Tenant's sole cost and expense, shall cause the Premises to be exterminated on a monthly basis to Landlord's reasonable satisfaction and shall cause all portions of the Premises used for the storage, preparation, service or consumption of food or beverages to be cleaned daily in a manner reasonably satisfactory to Landlord, and to be treated against infestation by insects, rodents and other vermin and pests whenever there is

evidence of any infestation. Tenant shall not permit any person to enter the Premises or the Project for the purpose of providing such extermination services, unless such persons have been approved by Landlord. If requested by Landlord, Tenant shall, at Tenant's sole cost and expense, store any refuse generated in the Premises by the consumption of food or beverages in a cold box or similar facility.

27. If Tenant desires to use any portion of the Common Area for a Tenant-related event, Tenant must notify Landlord in writing at least thirty (30) days prior to such event on the form attached as Attachment 1 to this Exhibit, which use shall be subject to Landlord's prior written consent, not to be unreasonably withheld, conditioned or delayed. Notwithstanding anything in this Lease or the completed and executed Attachment to the contrary, Tenant shall be solely responsible for setting up and taking down any equipment or other materials required for the event, and shall promptly pick up any litter and report any property damage to Landlord related to the event. Any use of the Common Area pursuant to this Section shall be subject to the provisions of Article 28 of the Lease.

Landlord may waive any one or more of these Rules and Regulations for the benefit of Tenant or any other tenant, but no such waiver by Landlord shall be construed as a waiver of such Rules and Regulations in favor of Tenant or any other tenant, nor prevent Landlord from thereafter enforcing any such Rules and Regulations against any or all of the tenants of the Project, including Tenant. These Rules and Regulations are in addition to, and shall not be construed to in any way modify or amend, in whole or in part, the terms covenants, agreements and conditions of the Lease. Landlord reserves the right to make such other and additional reasonable and uniform rules and regulations as, in its judgment, may from time to time be needed for safety and security, the care and cleanliness of the Project, or the preservation of good order therein; provided, however, that Landlord shall provide reasonable written notice to Tenant of such rules and regulations prior to them taking effect; and provided, further, that no such additional rule or regulation shall adversely affect Tenant's use or enjoyment of the Project as permitted under the Lease for the Permitted Use. Tenant agrees to abide by these Rules and Regulations and any such additional rules and regulations issued or adopted by Landlord. Tenant shall be responsible for the observance of these Rules and Regulations by all Tenant Parties.

ATTACHMENT 1 TO EXHIBIT F

REQUEST FOR USE OF COMMON AREA

REQUEST FOR USE OF COMMON AREA

Date of Request: _____

Landlord/Owner: _____

Tenant/Requestor: _____

Property Location: _____

Event Description: _____

Proposed Plan for Security & Cleaning: _____

Date of Event: _____

Hours of Event: (to include set-up and take down): _____

Location at Property (see attached map): _____

Number of Attendees: _____

Open to the Public? [___] YES[___] NO

Food and/or Beverages? [___] YES[___] NO

If YES:

- Will food be prepared on site? [___] YES [___] NO
- Please describe:
- Will alcohol be served?[___] YES[___] NO
- Please describe:
- Will attendees be charged for alcohol? [___] YES[___] NO
- Is alcohol license or permit required? [___] YES[___] NO
- Does caterer have alcohol license or permit: [___] YES[___] NO[___] N/A__

Other Amenities (tent, booths, band, food trucks, bounce house, etc.):

Other Event Details or Special Circumstances:

The undersigned certifies that the foregoing is true, accurate and complete and he/she is duly authorized to sign and submit this request on behalf of the Tenant/Requestor named above.

[*INSERT NAME OF TENANT/REQUESTOR*]

By: _____
Name: _____
Title: _____
Date: _____

EXHIBIT G

PTDM

(see attached)

EXHIBIT H

TENANT'S PROPERTY

To be provided by Tenant prior to the Term Commencement Date.

EXHIBIT I

FORM OF ESTOPPEL CERTIFICATE

To: BMR-Rogers Street LLC
17190 Bernardo Center Drive
San Diego, California 92128
Attention: Legal Department

BioMed Realty, L.P.
17190 Bernardo Center Drive
San Diego, California 92128

Re: Suite [___] (the "Premises") at 301 Binney Street, Cambridge, Massachusetts (the "Property")

The undersigned tenant ("Tenant") hereby certifies to you as follows:

1. Tenant is a tenant at the Property under a lease (the "Lease") for the Premises dated as of [_____], 20[__]. The Lease has not been cancelled, modified, assigned, extended or amended [except as follows: [_____]], and there are no other agreements, written or oral, affecting or relating to Tenant's lease of the Premises or any other space at the Property. The lease term expires on [_____], 20[__].

2. Tenant took possession of the Premises, currently consisting of [_____] square feet, on [_____], 20[__], and commenced to pay rent on [_____], 20[__]. Tenant has full possession of the Premises, has not assigned the Lease or sublet any part of the Premises, and does not hold the Premises under an assignment or sublease[, except as follows: [_____]].

3. All base rent, rent escalations and additional rent under the Lease have been paid through [_____], 20[__]. There is no prepaid rent[, except $[_____]][, and the amount of security deposit is $[_____] [in cash][OR][in the form of a letter of credit]]. Tenant currently has no right to any future rent abatement under the Lease.

4. Base rent is currently payable in the amount of $[_____] per month.

5. Tenant is currently paying estimated payments of additional rent of $[_____] per month on account of real estate taxes, insurance, management fees and Common Area maintenance expenses.

6. All work to be performed for Tenant under the Lease has been performed as required under the Lease and has been accepted by Tenant[, except [_____]], and all allowances to be paid to Tenant, including allowances for tenant improvements, moving expenses or other items, have been paid.

7. The Lease is in full force and effect, free from default and free from any event that could become a default under the Lease, and Tenant has no claims against the landlord or offsets or defenses against rent, and there are no disputes with the landlord. Tenant has received no notice of prior sale, transfer, assignment, hypothecation or pledge of the Lease or of the rents payable thereunder[, except [_____]].

8. [Tenant has the following expansion rights or options for leasing additional space at the Property: [_____].][OR][Tenant has no rights or options to purchase the Property.]

9. To Tenant's knowledge, no hazardous wastes have been generated, treated, stored or disposed of by or on behalf of Tenant in, on or around the Premises or the Project in violation of any environmental laws.

10. The undersigned has executed this Estoppel Certificate with the knowledge and understanding that [INSERT NAME OF LANDLORD, PURCHASER OR LENDER, AS APPROPRIATE] or its assignee is [acquiring the Property/making a loan secured by the Property] in reliance on this certificate and that the undersigned shall be bound by this certificate. The statements contained herein may be relied upon by [INSERT NAME OF PURCHASER OR LENDER, AS APPROPRIATE], [LANDLORD], BioMed Realty, L.P., BRE-Edison Parent L.P., and any [other] mortgagee of the Property and their respective successors and assigns.

Any capitalized terms not defined herein shall have the respective meanings given in the Lease.

Dated this [____] day of [_____], 20[__].

[_____],
a [_____]

By: _____
Name: _____
Title: _____

EXHIBIT J

FORM OF GROUND LEASE NONDISTURBANCE AND ATTORNMENT AGREEMENT

NONDISTURBANCE AND ATTORNMENT AGREEMENT

THIS AGREEMENT ("Agreement"), made this 31st day of March, 2015 between BMR-ROGERS STREET LLC, a Delaware limited liability company with offices at 17190 Bernardo Center Drive, San Diego, California ("Tenant"), SYNLOGIC, INC., a Delaware corporation with offices at 200 Sidney Street, Cambridge, Massachusetts ("Subtenant") and MBA-ROGERS STREET, LLC, successor in interest to MBA-Cambridge, LLC and O&T Realty, LLC ("Ground Landlord").

Background

A. Tenant has entered into a certain ground lease dated March 30, 1999, as amended by that certain letter dated July 29, 1999 and that certain Agreement Regarding Arbitration and Lease Amendments dated December 15, 1999, and as such ground lease has been assigned pursuant to that certain Assignment and Assumption of Ground Lease dated as of April 4, 2007 (collectively, and as the same may have been further amended, supplemented or otherwise modified, the "Ground Lease"), with the Ground Lease covering, in part, the building known and numbered as 301 Binney Street, Cambridge, Massachusetts (the "Building") which Building is located on Ground Landlord's property described in Exhibit A attached hereto (the "Property"). A notice of said Ground Lease is recorded with the Middlesex (South) Registry of Deeds in Book 31460, Page 4.

B. Subtenant and Tenant have entered into a lease, a copy of which is attached as Exhibit B (the "Sublease") (provided that a copy of the Sublease shall not be attached to any counterpart of this Agreement to be recorded at the Registry of Deeds) for certain premises located on the fourth floor of the Building (the "Premises").

C. Ground Landlord has been requested by Tenant and Subtenant to enter into a nondisturbance agreement with Subtenant.

AGREEMENT

NOW, THEREFORE in consideration of the promises and the mutual covenants hereinafter contained, the parties hereto mutually covenant and agree as follows:

1. Ground Landlord consents to the execution and delivery of the Sublease. The provisions of this Agreement set forth in Sections 2, 3 and 4, below, shall take effect upon the Execution Date (as defined in the Sublease).

2. Effective as of the Execution Date, if the Ground Lease shall terminate before the expiration of the then-current term, unless such termination results from condemnation or fire or other catastrophe, the Sublease, if then in existence, shall continue with the same force and effect as if Ground Landlord as lessor and Subtenant as lessee had entered into a lease for a term equal to the then unexpired term of the Sublease, as of the termination of the Ground Lease, containing the same terms, covenants and conditions as those contained in the Sublease (except as hereinafter provided), including the rights of renewal therein.

3. (a) Intentionally Omitted.

(b) Effective as of the Execution Date, any option which shall be or become vested in Subtenant to cancel the Sublease, because of default of Tenant, shall be ineffective unless Subtenant shall give Ground Landlord notice thereof, and Ground Landlord shall fail to cure such default within the time and in the manner Tenant would have been authorized to do had Tenant simultaneously received such notice. The provisions of this Subsection shall apply to any default occurring before or after the Sublease goes into effect.

4. Effective as of the Execution Date, from and after such termination of the Ground Lease and if Subtenant's right of possession shall be preserved as aforesaid and Subtenant is not in default under the terms of the Sublease (beyond applicable notice and grace periods):

(a) Subtenant will attorn as tenant to Ground Landlord, and Ground Landlord will accept such attornment.

(b) Ground Landlord will have the same remedies by entry, action or otherwise for the nonperformance of any agreement contained in the Sublease for the recovery of rent, for the doing of any waste or for any cause of forfeiture, as Tenant had or would have had if the Ground Lease had not been terminated.

(c) From and after the time of such attornment, Subtenant shall have the same remedies against Ground Landlord for the breach of an agreement contained in the Sublease that Subtenant might have had against Tenant if the Ground Lease had not been

terminated, except that Ground Landlord shall not be (i) liable for any act or omission of Tenant, except to the extent such act or omission continues after term initiation of the Ground Lease, (ii) subject to any offsets or defenses which Subtenant might have against Tenant, except to the extent such offsets or defenses relate to matters continuing after termination of the Ground Lease, (iii) bound by any rent or additional rent paid more than one month in advance of its due date which Subtenant might have paid in advance to Tenant, (iv) bound by any material amendment of the Sublease not consented to by Ground Landlord that results in a reduction in the amount of rent payable thereunder, or (v) liable for any security or tenant deposits held by or on behalf of any prior tenant (including Tenant) except to the extent actually received by Ground Landlord.

(d) Ground Landlord and Subtenant will enter into an agreement supplemental hereto containing the same terms and conditions as those contained in the Sublease but with such changes as may be necessary by reason of the substitution of Ground Landlord in the place and stead of Tenant as lessor.

5. The rights under this Agreement shall inure to the benefit of only Subtenant and those permitted assignees of Subtenant under the Sublease.

6. The term "Ground Landlord" as used in this Agreement means only the owner for the time being of the Premises, so that in the event of any sale of the Premises the predecessor owner shall be and hereby is entirely freed and relieved of all covenants and obligations of Ground Landlord hereunder provided that its successor assumes the same. The provisions of this Agreement, however, shall bind any subsequent owner of the Premises. The liability of Ground Landlord to Subtenant under this Agreement shall be limited to Ground Landlord's interest in the Property and insurance, condemnation, and any sale proceeds therefrom.

7. If any defaults shall occur under the Ground Lease, then, subject to the further conditions hereof, Subtenant may, but shall be under no obligation to, make payments to cure the same, and in such event Ground Landlord shall accept any sums so tendered if tendered prior to the expiration of any grace period, but Ground Landlord shall not be obligated to accept any payment which would have the effect of waiving any claim for damages which Ground Landlord may at any time have against Tenant or its successors in interest unless the payment by Subtenant shall be of the entire amount of such claim for damages whether or not then accrued.

8. Neither Subtenant nor its successors or assigns shall enter into any agreement which shall modify the rental terms of the Sublease without Ground Landlord's prior written consent not to be unreasonably withheld or delayed. Any agreement made in contravention to the provisions of this Section shall be of no force or effect as to Ground Landlord.

9. Nothing in this Agreement contained shall be deemed or construed to modify any of the provisions of the Ground Lease as between Ground Landlord and Tenant or to waive any rights which Ground Landlord may now or hereafter have against Tenant by reason of the Ground Lease or anything connected therewith.

10. If any lease or tenancy shall come into existence between Ground Landlord and Subtenant pursuant to the provisions of Section 2 or Section 4, the provisions of Section 6 shall apply to any liability imposed upon Ground Landlord by reason of such lease or tenancy.

11. This Agreement may not be modified orally or in any other manner than by an agreement in writing signed by all parties hereto or their respective successors in interest.

12. The covenants and agreements herein contained shall apply to, inure to the benefit of and be binding upon the parties hereto and upon their respective successors in interest and legal representatives except as otherwise hereinbefore provided.

13. This Agreement may be executed in counterpart and, when all counterpart documents are executed, the counterparts shall constitute a single binding instrument.

Executed under seal as of the date first written above.

GROUND LANDLORD: MBA-ROGERS STREET, LLC

By: _____
Name: _____
Title: _____

[signatures continue on following page]

TENANT: BMR-ROGERS STREET LLC

By: _____
Name: _____
Title: _____

[signatures continue on following page]

SUBTENANT: SYNLOGIC, INC.

By: _____
Name: _____
Title: _____

EXHIBIT A

PROPERTY

Parcel One:

A certain parcel of land situated in Cambridge, in Middlesex County and Common wealth of Massachusetts, bounded and described as follows:

NORTHWESTERLY:	on Binney Street two hundred (200) feet, thence turning at right angles and running;
NORTHEASTERLY:	along land shown on the plan hereinafter mentioned as belonging to Associates Transport, Inc., two hundred (200) feet to a point on the private way shown as Rogers Street on the plan hereinafter mentioned; thence turning at right angles and running;
SOUTHEASTERLY:	on Rogers Street two hundred (200) feet to a point on Sixth Street; thence turning at right angles and running;
SOUTHWESTERLY:	on Sixth Street two hundred (200) feet to the point of beginning.

Containing 40,000 square feet and being the parcel of land shown on the plan entitled "Plan of Land in Cambridge, Mass." dated August 8, 1945. William S. Crocker, C. E., said plan being duly recorded with Middlesex South Registry District Deeds, Book 6893, Page 509; and also being the parcel of land shown on a plan of land entitled “Plan of Land in Cambridge, Mass. Property of Industrial Stainless Steel Inc.” dated October 21, 1960, Schofield Brothers, Reg. Land Surveyors, said plan being duly recorded with Middlesex South Registry of Deeds as Plan Number 1664 of 1960 at Book 9706, Page End.

Parcel Two:

A certain parcel of land with the buildings thereon situated in said Cambridge, bounded and described as follows:

NORTHERLY:	by Rogers Street, three-hundred thirty-five and 27/100 (335.27) feet;
EASTERLY:	by land now or formerly of Harry J. Dowd, two hundred and no/100 (200) feet;

SOUTHERLY: by Binney Street;

WESTERLY: by Fulkerson Street.

Parcels One and Two together comprise all of Lots A, B, C and D as shown on a plan of Land entitled “Plan Showing Sub-division of land in Cambridge, Massachusetts,” dated July 29, 1940, Wm. H. McGinness C. E., said plan being duly recorded with the Middlesex South Registry of Deeds as Plan Number 1052 of 1940, at Book 6445, Page 394.

EXHIBIT B

SUBLEASE

See attached.

Exhibit 21.1

SUBSIDIARIES OF SYNLOGIC, INC.

Subsidiary	**Jurisdiction**
Synlogic IBDCo, Inc.	Delaware
Synlogic Operating Company, Inc.	Delaware
Synlogic Securities Corporation	Massachusetts

[KPMG LETTERHEAD]

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Synlogic, Inc.

We consent to the incorporation by reference in the registration statements (No. 333-220841) on Form S-8 and (No. 333-220948) on Form S-3 of Synlogic, Inc., of our report dated March 20, 2018, with respect to the consolidated balance sheets of Synlogic, Inc. as of December 31, 2017 and 2016, and the related consolidated statements of operations, comprehensive loss, contingently redeemable preferred equity and stockholders' equity, and cash flows for the years then ended, and the related notes (collectively, the consolidated financial statements), which report appears in the December 31, 2017 annual report on Form 10-K of Synlogic, Inc.

/s/ KPMG LLP
Cambridge, Massachusetts

March 20, 2018

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Jose-Carlos Gutierrez-Ramos, certify that:

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

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

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

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

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

   (b) [paragraph omitted in accordance with Exchange Act Rule 13a-14]

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

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

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

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

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

Date: March 20, 2018

By: /s/ Jose Carlos Gutiérrez-Ramos
Jose Carlos Gutiérrez-Ramos
President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Todd Shegog, certify that:

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

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

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

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

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

   (b) [paragraph omitted in accordance with Exchange Act Rule 13a-14]

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

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

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

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

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

Date: March 20, 2018

By: /s/ Todd Shegog
Todd Shegog
Chief Financial Officer

Exhibit 32.1

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

In connection with the Annual Report of Synlogic, Inc. (the "Company") on Form 10-K for the period ending December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Jose-Carlos Gutierrez-Ramos, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

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

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

Date: March 20, 2018

By: /s/ Jose Carlos Gutiérrez-Ramos
Jose Carlos Gutiérrez-Ramos
Chief Executive Officer

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 32.2

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

In connection with the Annual Report of Synlogic, Inc. (the "Company") on Form 10-K for the period ending December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Todd Shegog, Chief Financial Officer, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

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

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

Date: March 20, 2018

By: /s/ Todd Shegog
Todd Shegog
Chief Financial Officer

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.