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: 001-32979

MOLECULAR TEMPLATES, INC.

(Exact name of registrant as specified in its charter)

Delaware	**94-3409596**
(State or other jurisdiction of incorporation or organization)	**(IRS employer Identification number)**
9301 Amberglen Blvd, Suite 100, Austin TX 78729	**78729**
(Address of principal executive office)	**(Zip Code)**

(512) 869-1555

(Registrant's telephone number, including area code)

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

Title of Each Class	**Name of Each Exchange On Which Registered**
Common Stock, $0.001 Par Value Per Share	**The 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 Section 15(d) of the Act. Yes ☐ No ☒

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§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 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, a smaller reporting company, or emerging growth company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company," and 'emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☒
Emerging growth company	☐		

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

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant based upon the closing price of the Common Stock on the Nasdaq Capital Market on June 30, 2017 was approximately $25,999,000, computed based on the closing price of $4.29. The calculation of the aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant excludes shares of Common Stock held by each officer, director and stockholder that the registrant concluded were affiliates on that date. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

On March 21, 2018 there were 27,058,244 shares of the registrant's Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for the registrant's 2018 annual meeting of stockholders to be filed pursuant to Regulation 14A within 120 days of the registrant's fiscal year ended December 31, 2017 are incorporated herein by reference into Part III of this Annual Report on Form 10-K.

Molecular Templates, Inc.
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PART I

Special Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K, including the sections entitled "Business," "Risk Factors," and "Management's Discussion and Analysis of Financial Condition and Results of Operations," contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended or the Exchange Act. We may, in some cases, use words such as "project," "believe," "anticipate," "plan," "expect," "estimate," "intend," "should," "would," "could," "potentially," "possible", "will," or "may," or other words that convey uncertainty of future events or outcomes to identify these forward-looking statements. Forward-looking statements may include statements about:

- the implementation of our business strategies, including our ability to pursue development pathways and regulatory strategies for MT-3724 and other engineered toxin body, or ETB, product candidates;
- our ability to advance the development of our product candidates;
- our plans to pursue discussions with regulatory authorities, and the anticipated timing, scope and outcome of related regulatory actions or guidance;
- our ability to establish and maintain potential new partnering or collaboration arrangements for the development and commercialization of ETB product candidates;
- our financial condition, including our ability to obtain the funding necessary to advance the development of our product candidates;
- the anticipated progress of our product candidate development programs, including whether our ongoing and potential future clinical trials will achieve clinically relevant results;
- our ability to generate data and conduct analyses to support the regulatory approval of our product candidates;
- our ability to establish and maintain intellectual property rights for our product candidates;
- whether any product candidates that we are able to commercialize are safer or more effective than other marketed products, treatments or therapies;
- our ability to discover and develop additional product candidates suitable for clinical testing;
- our ability to identify, in-license or otherwise acquire additional product candidates and development programs;
- our anticipated research and development activities and projected expenditures;
- our ability to complete preclinical and clinical testing successfully for new product candidates that we may develop or license;
- our ability to have manufactured active pharmaceutical ingredient, or API, and drug product that meet required release and stability specifications;
- our ability to have manufactured sufficient supplies of drug product for clinical testing and commercialization;
- our ability to obtain licenses to any necessary third-party intellectual property;
- our ability to retain and hire necessary employees and appropriately staff our development programs;
- the sufficiency of our cash resources; and
- our projected financial performance.

Forward-looking statements are not guarantees of future performance and involve risks and uncertainties. Actual events or results may differ materially from those discussed in the forward-looking statements as a result of various factors. For a more detailed discussion of the potential risks and uncertainties that may impact their accuracy, see the "Risk Factors" section in Part I, Item 1A of this Annual Report on Form 10-K. Given these risks, uncertainties and other factors, you should not place undue reliance on these forward-looking statements. Also, these forward-looking statements reflect our view only as of the date of this report. You should read this report completely and with the understanding that our actual future results may be materially different from what we expect. We hereby qualify our forward-looking statements by our cautionary statements. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons that actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

ITEM 1. BUSINESS

Molecular Templates, Inc., or Molecular, is a clinical-stage oncology company focused on the discovery and development of differentiated, targeted, biologic therapeutics for cancer. Molecular utilizes its proprietary biologic drug platform to design and generate engineered toxin bodies, or ETBs, which Molecular believes provide a differentiated mechanism of action that may be beneficial in patients resistant to currently available cancer therapeutics. ETBs use a genetically engineered version of the Shiga-like Toxin A subunit, or SLTA, a ribosome inactivating bacterial protein. In its wild-type form, SLT is thought to induce its own entry into a cell when proximal to the cell surface membrane, self-route to the cytosol, and enzymatically and irreversibly shut down protein synthesis via ribosome inactivation. SLTA is normally coupled to its cognate Shiga-like Toxin B subunit, or SLTB, to target the CD77 cell surface marker, a non-internalizing glycosphingolipid. In Molecular's scaffold, a genetically engineered SLTA subunit with no cognate SLTB component is genetically fused to antibody domains or fragments specific to a cancer target, resulting in a biologic therapeutic that can identify the particular target and specifically kill the cancer cell. The antibody domains may be substituted with other antibody domains having different specificities to allow for the rapid development of new drugs to selected targets in cancer.

ETBs combine the specificity of an antibody with SLTA's potent mechanism of cell destruction. Based on the disease setting, Molecular has created ETBs that have reduced immunogenicity and are capable of delivering additional payloads into a target cell. Immunogenicity is the ability of a foreign substances to provoke an immune response in a host. ETBs have relatively predictable pharmacokinetic, or PK, and absorption, distribution, metabolism and excretion, or ADME, profiles and can be rapidly screened for desired activity in robust cell-based and animal-model assays. Because SLTA can induce internalization against non- and poorly-internalizing receptors, the universe of targets for ETBs should be substantially larger than that seen with antibody-drug conjugates, or ADCs, which are not likely to be effective if the target does not readily internalize the ADC payload.

ETBs have a differentiated mechanism of cell-kill in cancer therapeutics (the inhibition of protein synthesis via ribosome destruction), and Molecular has preclinical and clinical data demonstrating the utility of these molecules in chemotherapy-refractory cancers. ETBs have shown good safety data in multiple animal models as well as in Molecular's clinical studies to date. Molecular believes the target specificity of ETBs, their ability to self-internalize, their potent and differentiated mechanism of cell kill and their safety profile provide opportunities for the clinical development of these agents to address multiple cancer types.

Molecular's initial approach to drug development in oncology involves the selection of lead compounds to validated targets in cancer. Molecular has developed ETBs for various targets, including CD20, CD38, HER2, and PD-L1. CD20 is central to B cell malignancies and is clinically validated as a target for the treatment of lymphomas and autoimmune disease. CD38 has been validated as a meaningful clinical target in the treatment of multiple myeloma. PD-L1 is central to immune checkpoint pathways and is a target expressed in a variety of solid tumor cancers. Molecular's lead compound, MT-3724, is an ETB that recognizes CD20, a B cell marker and is currently in phase I study. The dose escalation portion of its first Phase I clinical trial has been completed for MT-3724 and was followed by the initiation of a Phase Ib expansion cohort, which was initiated Molecular's fourth fiscal quarter for the fiscal year ended December 31, 2017. Molecular anticipates initiating combination studies with MT-3724 and advancing one or more additional ETBs into clinical trials in 2018.

Molecular has built up multiple core competencies around the creation and development of ETBs. Molecular developed the ETB technology in-house and continues to make iterative improvements in the scaffold and identify new uses of the technology. Molecular also developed the proprietary process for manufacturing ETBs under Good Manufacturing Process, or GMP standards and continues to make improvements to its manufacturing processes. Molecular has conducted multiple GMP manufacturing runs with its lead compound and believes this process is robust and could support commercial production with gross margins that are similar to those seen with antibodies.

Challenges in Oncology

Existing mechanisms of action, the specific biochemical interaction through which a drug substance produces its pharmacological effect, are subject to numerous limitations in oncology. The clinical benefit of a given drug is a function of the biological properties of the drug, the target with which the drug interacts and the tumor indication being treated, but the relative contribution of each of these factors is difficult to separate. To date, significant

challenges exist in identifying the most appropriate cancer targets, applying the most effective mechanisms of action and selecting the appropriate disease indications and most responsive patient populations for a particular drug. These challenges, including the following:

- *Availability of viable targets.* The limited number of cancer targets addressable with currently available mechanisms of action; for example, targets appropriate for antibody-drug conjugate, or ADC, approaches are relegated to those extracellular targets that already readily and efficiently self-internalize;
- *Drug resistance. ADC* approaches generally use chemotherapy payloads which damage DNA, or disrupt or prevent microtubule assembly, and can be subject to the same mechanisms of resistance as in general chemotherapy;
- *Limits of monotherapy.* Established single-agent therapies are only effective in a minority of cancer patients;
- *Target identification and prioritization.* Current approaches to target prioritization are not comprehensively systematic and do not leverage a complete understanding of a drug's effect on a given tumor type to best identify high value targets in certain patient populations;
- *Clinical predictability of preclinical data. In vitro* epitope selection on a given target may not be predictive of clinical optimization; and
- *Biomarker use and utility.* Predictive biomarkers, the value and use of which are relatively new, are not uniformly used to proactively select responsive patient populations and/or preferred indications, which can drive longer development timelines with higher associated costs.

Molecular's Differentiated Approach

Molecular was founded on the principle that differentiated mechanisms of action are crucial for improving outcomes in oncology. Molecular has created a new ETB scaffold with a differentiated mechanism of action, coupled with a predictable PK and ADME profile. Molecular's ETB scaffold permits rapid screening for lead identification and easily scalable production, which Molecular believes offers an opportunity to provide meaningful clinical benefits in oncology with more cost efficient research and development than current treatments. Molecular believes the differentiated biological activity inherent to the ETB scaffold, particularly the ability to induce internalization and employ a differentiated mechanism of cell kill, may allow for differentiated clinical benefit in patients as monotherapy and in combination with standard of care therapies.

Molecular likens the extensive de-immunization work it has conducted on SLTA to the chimerization of monoclonal antibodies. Monoclonal antibody chimerization is a process for reducing immunogenicity when an antibody from one species is introduced into a different species. Chimerization has allowed for the wide-spread use of antibodies as human therapeutics across multiple disease settings. Molecular believes that the de-immunization of SLTA may allow for ETB use across multiple indications in oncology, including solid tumors, as well as other potential non-oncology indications.

Molecular has seen in both preclinical models and in its Phase Itrials to date that the differentiated mechanism of action employed by its ETBs can be effective in chemo-resistant tumor cells. Molecular believes this creates the potential for a rapid characterization of efficacy in carefully designed clinical trials in relapsed and refractory settings, particularly when targeting tumor markers that persist after treatment with multiple lines of therapy and whose targeting has been shown to provide a survival benefit. Molecular also has seen preclinically that its ETBs can have additive or synergistic activity in combination with a number of small molecule agents including chemotherapeutics, immunomodulatory agents and tyrosine kinase inhibitors. Molecular believes that the ability of ETBs to be additive or synergistic to a variety of current treatments may allow for combination therapy in earlier lines of disease.

Molecular believes it can develop ETBs against well-validated targets and new targets, enabling a phenotypically based clinical trial design that may result in shorter development timelines with lower associated costs. More specifically:

- *Molecular's research and design platform allows it to select lead ETBs from a comprehensive screen.* Molecular's ETB platform utilizes a suite of integrated technologies to screen ETB libraries for lead identification. Molecular performs initial preclinical screens on ETBs with lead selection around potency, affinity and expression. Critical components of Molecular's approach include:
    - The proprietary optimization of the genetic fusion between the immunoglobulin-targeting domain and Molecular's proprietary SLTA scaffold;
    - The proprietary de-immunizing modifications made to the SLTA scaffold, which reduce both adaptive and innate immune responses to ETBs;
    - Comprehensive screening for potency, affinity and specificity against target expressing versus non-expressing cells; and
    - Early evaluation of protein expression and stability of potential lead ETB candidates.
- *Molecular's ability to create lead ETBs to well-validated targets reduces the risk of target-mediated side effects and increases the likelihood of obtaining meaningful clinical benefit.* Molecular has deployed its technology against targets in oncology that are central to disease progression and that are known to persist after a given modality has failed. Molecular believes these targets reduce the risk of clinical failure from either unacceptable target-mediated adverse events or from a failure to impact disease outcome because of loss of the target. For example, Molecular's lead compound, MT-3724, targets the B-cell surface marker CD20. CD20 appears central to B-cell malignancies, and the FDA has approved multiple antibody therapies targeting CD20. Destruction of CD20-expressing cells has been generally safe and has not been found to cause significant damage to the patient, known as severe toxicity. CD20 cell surface expression persists in the majority of patients who have progressed after treatment with a CD20 monoclonal antibody. Molecular chose targeting of CD20 for Molecular's lead ETB program because of its known lack of internalization upon antibody binding, centrality to disease progression, lack of associated toxicities and persistence after treatment failure. Molecular used a similar rationale in the selection of Molecular's current pipeline, including ETBs targeting CD38, HER2, and PD-L1, which are targets central to disease outcome that persist after a given modality has failed.
- *Molecular's ETB platform allows Molecular to identify ETBs to targets and select patients in the Phase I clinical trials that phenotypically match that ETB program.* Molecular can screen a library of single chain variable fragments, or scFvs, expressed in Molecular's ETB scaffold to a given target. The pharmacokinetic and ADME profile of these compounds are similar and relatively predictive in humans based on animal models. Once the lead is selected and Investigational New Drug Application, or IND-enabling studies are completed, Molecular can enrich a Phase I clinical trial with only patients expressing the target of the ETB. In these Phase I clinical trials, Molecular can get a faster read on safety as well as efficacy than is possible in many drug development programs. Molecular's Phase I trial in non-Hodgkin's lymphoma with MT-3724 established the PK, ADME, dose-limiting toxicities, or DLTs, maximum tolerated dose, or MTD, and recommended Phase II dose and monotherapy efficacy after just 21 patients were treated.

Molecular's Strategy

Molecular's goal is to bring the right ETBs to the right patients to provide long-lasting benefits that ultimately improve patients' lives. To achieve its goal, Molecular is:

- *Implementing development strategies that capitalize on the differentiated pharmacological features of Molecular's ETB technology and the validated nature of the targets it has chosen*. Molecular believes the target specificity of its ETBs, their ability to self-internalize, their potent and differentiated mechanism of cell kill and their safety profiles will provide opportunities for the clinical development of these agents to address multiple cancer types. For example, Molecular is aggressively developing its lead product MT-3724 as a single agent therapy for relapsed and refractory diffuse large B-cell lymphoma, or DLBCL, patients and in combination with approved therapies in earlier stages of high-risk DLBCL. The targeting of CD20 with antibody therapeutics is known to confer clinical benefit in these settings. MT-3724's differentiated mechanism of action, safety and pharmacological profiles targeting CD20 may provide an advantage over other modalities. Given the unique mechanism of direct cell-kill, via ribosome inactivation, Molecular believes there is the potential for combination or sequential drug strategies that may be unique to its ETB drug candidates. Further, based on MT-3724 safety data to date, Molecular believes the different PK and ADME profiles of its ETBs may allow them to be more appropriate therapies for certain patient populations, particularly those who are unable to tolerate intensive chemotherapy as primary or conditioning therapy. For example, in the Phase I clinical trial for MT-3724, the median age was 67 and the median number of prior therapies was four. Molecular believes all of these attributes will enable Molecular to pursue development strategies not feasible with other therapeutic approaches.
- *Efficiently building a broad pipeline of ETB therapeutics targeting defined patient populations through the use of Molecular's research and design platform*. Molecular believes its research and design platform is an efficient and productive discovery and development engine that can identify new targets across multiple cell types with the aim of creating a portfolio of novel, cell targeting ETBs. By selecting tumor targets best suited to ETB biology, Molecular can prioritize indications, including potential niche indications and/or niche subsets of indications. Molecular believes this will enable the identification of patients who may be more likely to respond to its therapies, allowing Molecular to potentially shorten development timelines and lower associated costs.
- *Maximizing the value of Molecular's early pipeline through the continual improvement of Molecular's technology.* Since the founding of the company, Molecular has made substantial progress in improving its ETB technology. Molecular has created a proprietary SLTA that has been heavily modified to dramatically reduce innate and adaptive immunogenicity. In addition, new approaches have been developed for the genetic fusion of the SLTA and antibody domain that enhances the potency of Molecular's ETBs. Molecular has also developed ETBs that have the ability to deliver foreign class I antigens into target cells for expression in complex with MHC class I molecules on the target cell's surface. Molecular has shown preclinically that certain foreign antigens can be functionally recognized by endogenous human T-cells thereby enabling a potentially new and differentiated approach to immuno-oncology.
- *Building a fully integrated discovery-to-commercial oncology company focused on compounds with unique and differentiated biology* Molecular believes that differentiated mechanisms of action are crucial for improving outcomes in oncology. Molecular has created a robust translational platform that Molecular believes allows it to create a sustainable, novel pipeline of ETBs with differentiated mechanisms of tumor destruction, relatively predictable PK and ADME, and scalable and economical manufacturing. If MT-3724, MT-4019, or any future product candidates Molecular may develop are approved, Molecular will consider commercializing them itself in select markets.

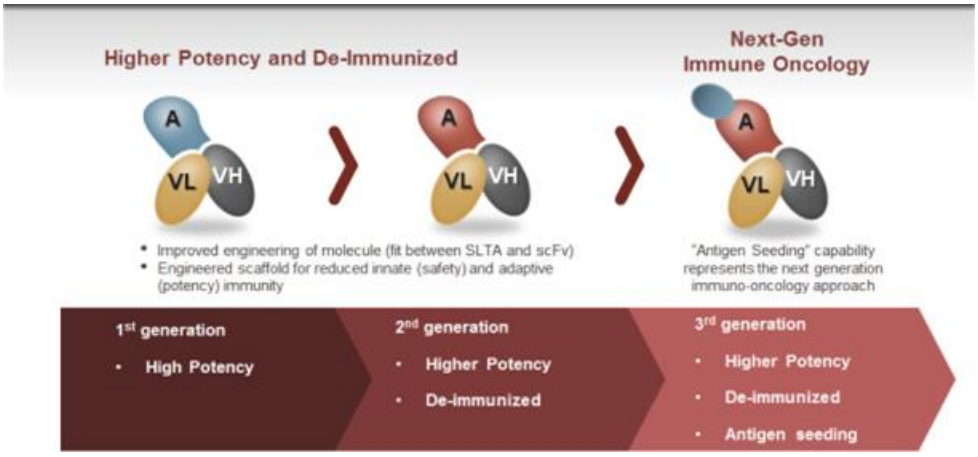
Molecular's Engineered Toxin Body (ETB) Platform Technology

Although chemotherapy remains the cornerstone of treatment for most cancers, the advent of new and targeted classes of therapies has dramatically changed outcomes in the treatment of disease. The advent of monoclonal antibodies, signal transduction inhibitors and, most recently, immune-oncologics have provided substantial clinical benefit in both the relapsed and refractory setting and, when used in combinations, in earlier lines of therapy.

Molecular believes that ETBs represent a new class of targeted agents with differentiated biology that are well-positioned to improve outcomes in cancer patients.

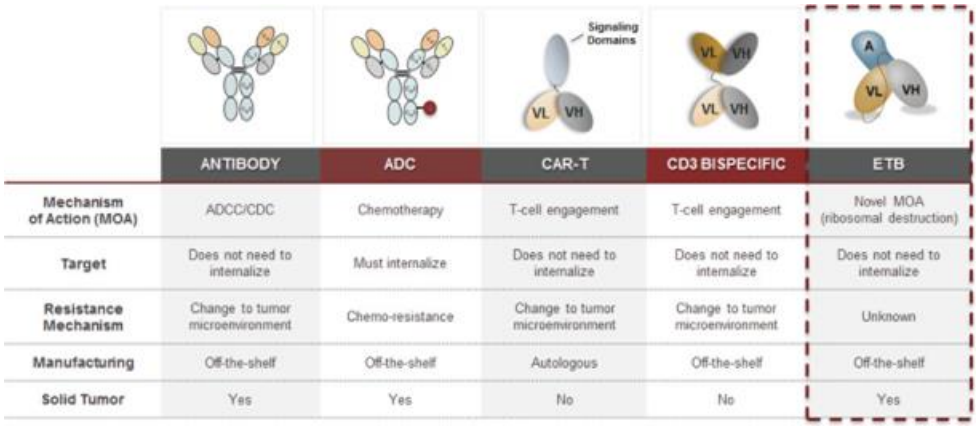
ETBs appear to induce the internalization of non- or poorly-internalizing targets, have a differentiated mechanism of action (enzymatic and irreversible ribosome inactivation), have relatively predictable PK and ADME profiles and can be readily manufactured to GMP standards. From a library of antibody targeting domains, Molecular's research and design platform allows for the comprehensive (six to eight weeks) *in vitro* selection of a lead ETB to a given target based on affinity and specificity, potency and expression. Lead selection is confirmed through the use of animal models to verify PK, ADME and potency. ETBs possess potent direct cell killing effects via a differentiated mechanism of action, can force receptor internalization, and can be used to deliver payloads such as foreign class I antigen to the cytosol. MT-3724, Molecular's lead ETB candidate, is being developed for treating B-cell malignancies and utilizes the wild-type SLTA. Because of the immune-compromised nature of patients with B-cell malignances, Molecular did not believe de-immunization of SLTA was critical in these patients; this hypothesis has been supported by clinical data in DLBCL patients.

In subsequent ETBs, Molecular utilizes a highly potent and proprietarily de-immunized SLTA scaffold that elicits significantly reduced innate and adaptive immunogenic responses as demonstrated in preclinical and animal studies (presented at the 2017 American Association for Cancer Research, or AACR, Annual Meeting). For indications where tumors have been demonstrated to be sensitive to T-cell engagement, Molecular has developed ETBs that deliver foreign class I viral antigens for presentation on the surface of the tumor: Molecular's Antigen Seeding Technology (AST), a differentiated approach to immune-oncology. Molecular is currently building out animal models to further validate and screen ETB candidates support this approach.



Molecular believes that its proprietary ETB technology platform represents a differentiated approach in oncology. ETBs possess the targeting specificity of antibody-based therapeutic approaches but deliver highly potent payloads that disrupt protein synthesis, a fundamental function of a cancer cell, in a manner not subject to traditional chemotherapy resistance mechanisms or target internalization limitations, as with ADCs. Molecular is also seeking to expand the universe of potential targets subject to pharmaceutical treatments by exploiting the ETB's ability to force internalization against receptors that do not normally internalize to. MT-3724 highlights this capability and approach. MT-3724 targets CD20, which is a canonical non-internalizing receptor that is not susceptible to traditional chemo-based ADC approaches.

Novel mechanisms of action are needed in oncology treatment, and Molecular believes that its ETB platform technology's differentiated mechanisms of action may offer unique benefits over existing treatment modalities.



	ANTIBODY	ADC	CAR-T	CD3 BISPECIFIC	ETB
Mechanism of Action (MOA)	ADCC/CDC	Chemotherapy	T-cell engagement	T-cell engagement	Novel MOA (ribosomal destruction)
Target	Does not need to internalize	Must internalize	Does not need to internalize	Does not need to internalize	Does not need to internalize
Resistance Mechanism	Change to tumor microenvironment	Chemo-resistance	Change to tumor microenvironment	Change to tumor microenvironment	Unknown
Manufacturing	Off-the-shelf	Off-the-shelf	Autologous	Off-the-shelf	Off-the-shelf
Solid Tumor	Yes	Yes	No	No	Yes

ETB Product Pipeline

Molecular is developing a pipeline of ETBs that Molecular believes will provide a meaningful and long-lasting benefit to cancer patients. Molecular plans to develop each of these as single agents and/or in combination with other therapies, as applicable. The following table depicts Molecular's current pipeline:

Product Candidate	Target	Indication	Lead Selection	IND	Phase I	Phase II
MT-3724	CD20	B-Cell Malignancies				
MT-4019	CD38	Multiple Myeloma				
MT-5111	HER2	Breast				
MT-5050	PD-L1	Melanoma				
MT-6868	CD45	SCT				

MT-3724—ETB Targeting CD20

Overview

CD20 is expressed on 90% of B-cell non-Hodgkin's lymphoma, or NHL, cells and is a non-internalizing receptor. Rituxan (rituximab), an antibody to CD20, is approved for treatment of NHL in both the front and second-line settings. Rituxan has limited direct cell-kill effects against CD20-expressing cells. Instead, it works through indirect methods of recruiting immune responses to CD20-expressing cells through antibody dependent cell-mediated cytotoxicity, or ADCC, and/or complement dependent cytotoxicity, or CDC. Rituxan's indirect cell-kill mechanism's reliance on a favorable tumor microenvironment for immune stimulation is problematic because it allows opportunities for resistance to emerge. Therefore, direct cell-kill approaches that target CD20-expressing lymphomas are attractive. Two such agents are currently approved: the radioisotope-conjugated antibodies Bexxar, developed by GlaxoSmithKline, and Zevalin, developed by IDEC Pharmaceuticals (now part of Biogen), both of which use ionizing radiation to induce direct cell-kill without internalization being necessary. These radioisotope conjugated antibodies are more effective than naked anti-CD20 antibody approaches such as Rituxan and HuMax-CD20 in the relapsed or refractory indolent NHL setting because they are far less dependent on the physiology of the tumor. However, despite their favorable efficacy profile, Bexxar and Zevalin are considered commercial

disappointments and have not been widely adopted by oncologists primarily due to the constraints associated with the administration of nuclear medicines. Radioimmunotherapies are difficult to administer, with few institutions licensed for nuclear medicine. Because of these factors, the combined use of Bexxar and Zevalin accounted for only a minimal share of all administered second-line therapies for indolent NHL patients worldwide (seven major markets) despite superior clinical data in this setting. Bexxar was subsequently taken off the market in 2013. Molecular believes this provides a significant opportunity for a CD20-targeting therapy, such as MT-3724, that directly kills cells without the use of radioisotopes, and utilizes a mechanism of action of cell kill that is not subject to cross-resistance with chemotherapy or antibody approaches.

MT-3724 is a ETB specific to the B-cell marker CD20 protein. Molecular developed MT-3724 to provide a non-radioactive means of direct cell-kill targeted to CD20 for the treatment of NHL. The differentiated mechanism of action of MT-3724 involves binding to the surface protein CD20, forcing internalization into the target cell, retrograde transport to the cytosol and subsequent enzymatic and permanent ribosome-inactivation. Following the completion of the Phase I dose escalation trial in 2017, Molecular is currently conducting a Phase Ib expansion trial of MT-3724 in patients with relapsed/refractory DLBCL. Molecular is also planning to initiate two MT-3724 studies in earlier lines of DLBCL in 2018, one in combination with chemotherapy and the other in combination with Revlimid.

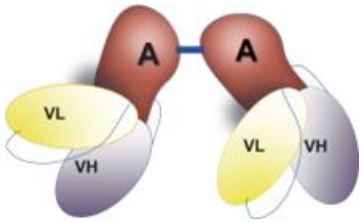
Preclinical Overview

MT-3724 is a fusion protein which is comprised of the variable regions of the heavy (VH) and light chains (VL) of an anti-CD20 antibody connected with a short linker peptide (Figure 1) that make up a single-chain variable fragment, or scFv. This binding domain is genetically fused to a proprietarily engineered form of SLTA. Because MT-3724 lacks the fragment crystallizable, or Fc, portion of an intact antibody, MT-3724 does not rely on host ADCC, CDC, or complement-mediated lysis to induce cell death. Naked antibody therapies rely on the induction of ADCC/CDC as the primary mechanisms of indirect cell-kill. Thus, Molecular believes MT-3724 may avoid the mechanisms of lymphoma cell resistance that occurs with the currently available anti-CD20 antibodies.

The three key biological properties of MT-3724 that reflect the differentiated biology of ETBs include:

- forced internalization against CD20, a receptor that does not normally internalize;
- self-routing through the cell to the cytosol; and
- irreversible and enzymatic inactivation of target cell ribosomes.

Figure 1. **MT-3724 drug product**



In binding experiments, MT-3724 bound selectively to CD20+ expressing cell lines with specificity and affinity similar to Rituxan. MT-3724 gains entry into target cells through CD20-dependent binding. The binding of MT-3724 to CD20 is a critical step in cellular cytotoxicity induced by MT-3724.

In Vivo Results

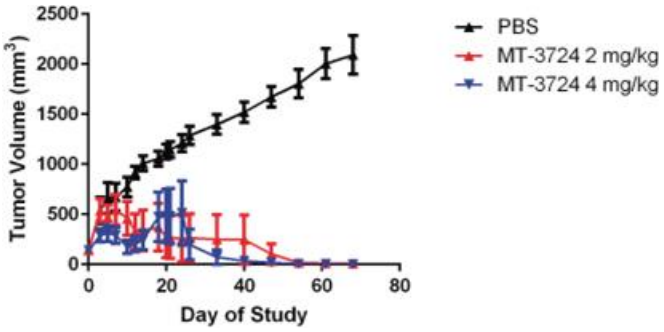
MT-3724 has demonstrated potent and specific activity against a wide panel of CD20 expressing cancer cell lines, including Rituxan refractory patient samples. In addition to *in vitro* activity, Molecular has evaluated MT-

3724 in a series of preclinical efficacy models that show its potent activity in destroying CD20 expressinghuman tumors. MT-3724 was generally well tolerated in these animal models. In one model, tumor responses were measured on Days 5, 10, 15 and 20 by bioluminescent imaging of Raji-luc tumors as shown in Figure 2. Treatment with MT-3724 was well tolerated and resulted in a statistically significant survival advantage in this model.

Figure 2. **Disseminated Raji-Luc Imaging**

Molecular performed a study to determine the therapeutic potential of MT-3724 to inhibit the growth of CD20-expressing human lymphoma cells in a subcutaneous implant model in athymic nude mice. Molecular observed a significant anti-tumor response in MT-3724 treated mice. Specifically, administration of MT-3724 at both 2 mg/kg/dose and 4 mg/kg/dose demonstrated cytotoxic activity against human lymphoma cells in this xenograft tumor model, as shown in Figure 3. Treatment with MT-3724 was generally well tolerated in the animals.

Figure 3. **Subcutaneous Raji Xenograft Tumor Volumes**



Clinical Overview

MT-3724 is being developed for the treatment of patients with relapsed or refractory NHL who have failed one or more chemotherapeutics and anti-CD20 antibody therapies and for whom all other approved therapies (biologic, chemotherapeutic or stem cell transplantation) are not an option. The primary objectives of the multicenter Phase I clinical trial of MT-3724 was to assess the tolerability of MT-3724 and to establish the maximum tolerated dose, or MTD of the drug. The secondary objectives of the Phase I clinical trial were to assess the pharmacokinetic profile of MT-3724 after intravenous dosing as well as to assess any biological and clinical activity. This Phase I clinical trial was not designed to show statistical significance of the study endpoints.

Molecular initially filed an IND application with the U.S. Food and Drug Administration, or FDA, on July 31, 2014, and Molecular received the notification from the FDA that it could proceed with the Phase I trial on August 29, 2014 with the first patient dosed in March of 2015. The Phase I trial was a multi-center, open-label,

multiple-dose Phase I, dose-escalation study of MT-3724 in subjects with relapsed, refractory B-cell NHL or chronic lymphocytic leukemia, or CLL. A total of 21 patients were treated with MT-3724 with doses ranging from 5 to 100 mcg/kg. Patients were dosed 3 times per week over two weeks (6 doses) followed by a two-week hiatus for the first cycle, as mandated by the FDA. Subsequent cycles were dosed over two weeks with a one-week hiatus. Originally, up to five cycles of treatment were allowed per protocol. This was subsequently amended to allow for extended dosing beyond five cycles.

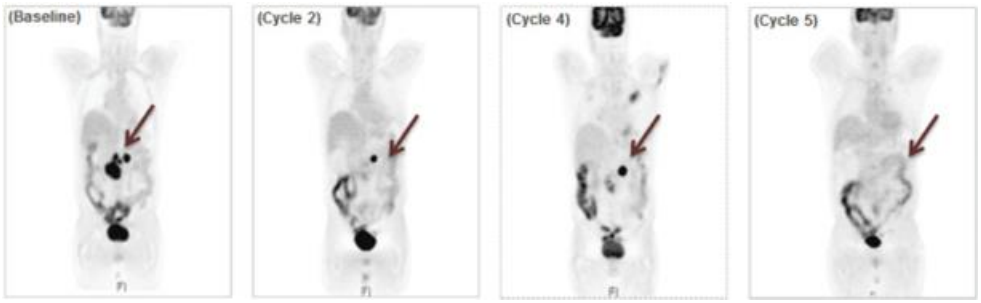
Twenty-one patients were treated with escalating doses of MT-3724 starting at the 5 mcg/kg dose level. Nearly all patients experienced at least one adverse event, with peripheral edema, diarrhea, myalgia, cough, fatigue, constipation, nausea, anemia, stomatitis, pyrexia, dizziness, headache, insomnia, dyspnea, being the more commonly reported adverse events. During the study, there were no treatment-related deaths.

The first two patients treated in the 100 mcg/kg/dose cohort developed signs and symptoms of a systemic inflammatory response (a constellation of adverse events including a grade 2 decrease in serum albumin levels, which together were consistent with capillary leak syndrome) in the first cycle of treatment. Upon thorough evaluation of each case, the Data Monitoring Committee, or DMC, deemed the capillary leak syndrome the DLT and determined that the 100 mcg/kg/dose had exceeded the MTD and the cohort was closed to further enrollment. The symptoms related to the DLT were non-life threatening and resolved upon cessation of dosing MT-3724. Six patients were dosed at a reduced dose level of 75 mcg/kg cohort with no DLTs reported. Upon identifying 75 mcg/kg as the maximum tolerated dose, or MTD, the recommended Phase Ib/II dose was designated to be 75 mcg/kg.

To date, 31 serious adverse events, or SAEs have been reported. Most these events were attributed to exacerbation of a pre-existing condition or disease progression. Both subjects in the 100 mcg/kg/dose cohort were withdrawn in cycle 1 for SAEs which the investigator and DMC assessed as DLTs and determined that the MTD had been exceeded.

Molecular has observed promising signals of single-agent activity with MT-3724. Patients in the Phase I trial were of older age (median age = 67) and heavily pre-treated, with a median of four prior therapies. Those patients with ≤ four prior therapies (n=5) were generally chemo-intolerant patients who could not sustain multiple lines of chemo-based regiments. The majority of patients were of the DLBCL subtype (n=15). Of the 14 evaluable DLBCL patients who received MT-3724, eight patients entered the trial with low levels of serum anti-CD20 antibody while six patients had high levels of anti-CD20 antibody. As reported in Molecular's presentation to the 2016 American Society of Hematology Annual Meeting, or the 2016 ASH Meeting, patients with high anti-CD20 antibody did not respond to MT-3724, presumably due to target inaccessibility. In the eight DLBCL patients with low anti-CD20 antibody, the observed objective response rate, or ORR, was 25% (2/8) including a partial response, or PR, and a complete metabolic response, or CMR. Molecular observed clinical responses starting at the lowest dose level of 5 mcg/kg as shown in Figure 4. The patient who achieved a CMR was eligible for and received an allogeneic stem cell transplant, or SCT. Three patients had stable disease, or SD, with tumor reductions of 19% (10 mcg/kg), 48% (75 mcg/kg), and 49% (100 mcg/kg), respectively. The patient at 100 mcg/kg with 49% tumor reduction had received only a single dose of MT-3724 at the time of measurement. The remaining three patients had progressive disease, or PD. Notably, three of the eight DLBCL patients received fewer than two cycles of MT-3724 due to early withdrawal from the study (including the two patients at the DLT dose of 100 mcg/kg). Significant ADAs were not observed among DLBCL patients and did not appear to neutralize the efficacy of MT-3724 in patients.

Figure 4. **PET images for DLBCL patient in the 5 mcg/kg dose cohort**



Based on the clinical effect observed among DLBCL patients, Molecular has opened a Phase Ib expansion study to further explore the potential of MT-3724 in DLBCL. Molecular expects to enroll up to forty additional DLBCL patients in this study. A brief update on the first three patients dosed in the MT-3724 Phase Ib expansion was delivered at the World ADC Summit Europe on March 28, 2018. Observations included the following:

- One patient was assessed in a partial response (PR) after the first dose of MT-3724. The PR was confirmed at the end of cycle 2 per protocol and the patient remains on study with continued dosing of MT-3724. The other patients were assessed as stable disease (SD) and progressive disease (PD).
- A dose interruption and reduction was required in 2 of the first 3 patients in Phase Ib expansion (including the patient with the PR). These patients had high body weights, which resulted in high absolute doses of MT-3724 based on 75 mcg/kg dosing. The adverse events observed (grade 2 and 3 headache, arthralgia, and myalgia) were non-life threatening and dosing resumed at 50 mcg/kg dose, which and has been generally well tolerated.
- Based on these data and the clinical activity of MT-3724 observed at doses as low as 5 mcg/kg, a decision was made to define the MTD of MT-3724 as 50 mcg/kg with a maximum total drug per dose of 6 mg.

Molecular expects to report additional results from this expansion study in the first half of 2018.

Furthermore, Molecular is planning to develop MT-3724 in earlier lines of therapy in combination with chemotherapy and non-chemotherapy based regiments. Molecular plans on initiating a Phase IIa study combining MT-3724 with a chemo regiment in transplant-ineligible DLBCL patients in mid-2018. Additionally, a second Phase IIa study evaluating MT-3724 in combination with Revlimid in DLBCL patients is planned to begin mid-2018. Additional future studies in earlier lines of therapy may include MT-3724 in combination with chemotherapy-based standards of care for 2nd- and 3rd-line DLBCL patients that are ineligible for transplant

Recent Presentations

MT-3724 AACR presentation: In April 2017, Molecular presented preclinical data for Molecular's MT-3724 lead compound at the AACR annual conference. MT-3724 is an ETB with wild-type SLTA and is not de-immunized. Nevertheless, to date, Molecular has not seen a high level of neutralizing antibodies in patients treated with MT-3724, likely because of the nature of their disease (B-cell malignancy) and their prior therapies (B-cell depleting agents), which leave these patients with compromised immune systems. The MT-3724 presentation at AACR demonstrated the reduction in anti-drug antibodies, or ADAs, seen when MT-3724 was co-administered with sirolimus in both murine and non-human primate, or NHP, models. These data may be useful in guiding clinical development of MT-3724 if significant levels of ADAs are seen in patients treated with MT-3724. Additionally, researchers at MD Anderson Cancer Center presented preclinical data on MT-3724 potency against mantle cell lymphoma samples. Researchers demonstrated a substantial survival advantage in a xenograft model using a patient-derived mantle cell lymphoma.

MT-4019—ETB Targeting CD38

Overview

CD38 is a single-chain type II transmembrane glycoprotein that is expressed by a variety of hematologic cells in an activation- and differentiation-dependent manner. Its cellular functions are involved in the regulation of cell proliferation and survival. CD38 is expressed at high rates on patient myeloma samples, making it an important marker and potential target in the development of targeted biologics.

Daratumumab (trade name Darzalex®) received FDA approval for the treatment of multiple myeloma in 2015. Daratumumab is a monoclonal antibody that binds CD38 on multiple myeloma cells and induces cell death indirectly. Approval was supported by a Phase II pivotal trial in fourth line myeloma patients and subsequent randomized studies in earlier lines of myeloma therapy. A careful analysis of this study's results reveals that CD38 expression persists after patients have progressed on daratumumab and that the myeloma cells of patients who relapsed after daratumumab treatment showed an increase in cell surface receptors (CD55 and CD59) that inhibit daratumumab's ability to recruit an immune response to the myeloma cells (Nijhof *et al.*, 2016). Persistence of a surface marker that is central to disease strongly suggests that a different modality targeting that surface marker and that is not cross-resistant to antibody therapy may provide substantial clinical benefit in myeloma.

Despite cell specific expression, an ADC, approach to CD38 has not been developed, likely because CD38 does not efficiently internalize, thereby limiting the amount of drug that could be delivered to myeloma cells. Because SLTA can force its own internalization and enzymatically inhibit ribosome function thereby killing the cell, Molecular theorized that the engineering of a potent and specific ETB targeted to CD38 could overcome the lack of internalization seen with CD38.

MT-4019 is Molecular's ETB that specifically targets CD38. The compound was evaluated in many of the same preclinical assays as daratumumab. Daratumumab is an anti-cancer drug originally developed by Genmab. Based on published daratumumab xenograft data, MT-4019 appears to have more potent direct cell-kill activity and more rapid and pronounced activity when tested in the identical xenograft model. However, the mechanism of action of MT-4019 is wholly different than daratumumab, and Molecular believes that MT-4019 may be active in CD38+ myeloma patients that have failed treatment with an anti-CD38 antibody.

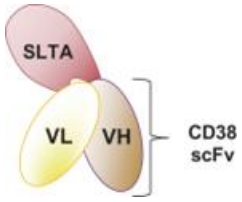
The proposed development plan for MT-4019 is modeled on that of daratumumab. After a robust response rate in its Phase I trial, daratumumab was granted Breakthrough Therapy Designation, and its expanded Phase II trial (N=106) was considered sufficient for registration. If similar efficacy is seen with MT-4019, Molecular believes it may be able to pursue a similar accelerated approval strategy via a Phase II clinical trial.

Preclinical Data with MT-4019

MT-4019 Structure

MT-4019 utilizes Molecular's updated scaffold in which the fusion of the scFv to the SLTA has been optimized and in which the SLTA portion of the ETB has been de-immunized. MT-4019 has high affinity for the CD38 receptor and potent and specific cell-kill activity against CD38-expressing cells.

Figure 5. MT-4019 Drug Product



De- immunized SLTA scaffold

The host immune response to bacterial proteins used in the treatment of solid tumors has historically prevented prolonged dosing and limited the utility of immunotoxins as a class of molecules. There has been much greater success with immunotoxins in hematological malignancies, as patients tend to be immunosuppressed due both to the nature of their disease and the drugs used in treatment (Kreitman *et al.*, 2006). Multiple myeloma patients show a decreased immune response to bacterial proteins (Jacobson, *et al.*, 1986), and Molecular has further reduced the likelihood of high levels of neutralizing antibodies by using its proprietary de-immunized SLTA, as shown in Molecular's MT-4019 presentation at the 2017 AACR Annual Meeting.

MT-4019 Binding Specificity

MT-4019 showed high-affinity binding to recombinant CD38 protein and to the CD38+ myeloma H929 cell line. MT-4019 shows no binding to a non-specific protein.

MT-4019 In Vitro Activity

MT-4019 shows extremely potent and specific cell-kill activity against cells that express CD38. MT-4019 was tested for cell-kill activity on H929 and HDLM-2 cells, two commonly used cell lines that are CD38+ and CD38-, respectively. The IC_{50} (the concentration at which 50% of cells are killed) for MT-4019 was calculated as 16 picomolar (pM) against H929 cells, but Molecular did not observe any measurable cell-kill with MT-4019 against CD38-HDLM-2 cells. A full summary of cell kill results is presented in Table 1.

Table 1. Summary of Cell-Kill Activity for MT-4019

Cell Line	Type	CD38 Expression Level	CD_{50}(1)
H929	Multiple myeloma	+++	16 pM
Daudi	B-lymphoblast	+++	58 pM
ST486	B-lymphoblast	+++	41 pM
MOLP-8	Multiple myeloma	++	228 pM
BC3	B-lymphocyte	++	180 pM
IM-9	Multiple myeloma	—	>>100 nM
HDLM-2	B-lymphoblast	—	>>100 nM
L1236	B-lymphoblast	—	>>100 nM

(1) pM = picomolar; nM = nanomolar

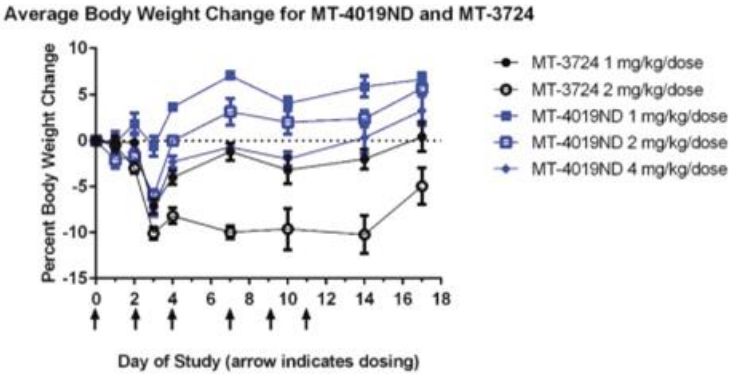
The potency of MT-4019 compares favorably with the potency reported for daratumumab, but direct comparisons are difficult as daratumumab requires the addition of effector cells for cytotoxicity. In an assay measuring the potency of CDC-mediated cell-kill of daratumumab against Daudi cells, the CD_{50} was reported to be approximately 800pM (de Weers *et al.*, 2011). compared to 58pM with MT-4019 What is likely to be more important than the improved potency seen with MT-4019, though, is its wholly distinct mechanism of action. In patients who have progressed after CD38 treatment but still retain CD38 expression, the direct mechanism of cell kill seen with MT-4019 may be relevant.

MT-4019 In Vivo Activity: MTD Study

MT-4019 and MT-3724 were tested in CB17 SCID mice to determine the maximal tolerated dose, or MTD, of the drug. Mice were dosed via IP injection with either MT-3724 at 1 or 2mg/kg or MT-4019 at 1, 2, or 4 mg/kg. Dosing was three times weekly for two weeks, and cage-side observations and body weight measurements were conducted. The doses of MT-4019 were selected based on experience with MT-3724.

The MTD for MT-4019 was not identified within the dose range tested. No deaths were observed during dosing or the recovery period. Average body weight loss appeared dose-dependent with the highest loss for MT-4019 occurring in the 4 mg/kg arm, but even in this arm mean body weight loss was still no more than 5% of baseline (Figure 6). By comparison, at the 2 mg/kg dose for MT-3724, mean body weight loss was 10%.

Figure 6. **Murine Safety Study**



MT-4019 In Vivo Activity

Molecular replicated the Daudi cell xenograft model used with daratumumab (de Weers,*et al.*) with MT-4019 to confirm *in vivo* activity. Molecular implanted luciferase-expressing Daudi cells (2.5 X 10^6 Daudi cells as in the daratumumab study) in SCID mice and administered varying doses of MT-4019. Due to the smaller size of the younger mice used in the MT-4019 study (5-6 weeks), compared to the daratumumab study (8-10 weeks), the tumor burden per mass was larger for mice in the MT-4019 study. There was variability in tumor enlargement between the daratumumab and MT-4019 models. As measured by the integrated light intensity, tumors were significantly larger at peak in the MT-4019 model than in the daratumumab model ($1.5X10^{11}$ photons per second in control animals for MT-4019 vs. up to $1.0X10^{7}$ integrated light intensity in control animals for daratumumab). Because of the much shorter half-life of MT-4019, six administrations were given over two weeks as opposed to one administration of daratumumab.

By Day 40, a statistically significant difference in bioluminescence imaging (BLI) was seen between mice treated with the vehicle control and mice treated with MT-4019 (Figure 7A). Tumor imaging clearly shows the difference between the treated and untreated mice by day 22 (Figure 7B).

Figure 7. **MT-4019 Daudi-luc Disseminated Xenograft**

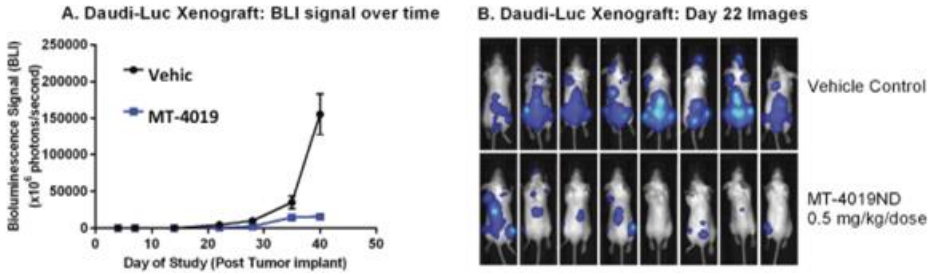
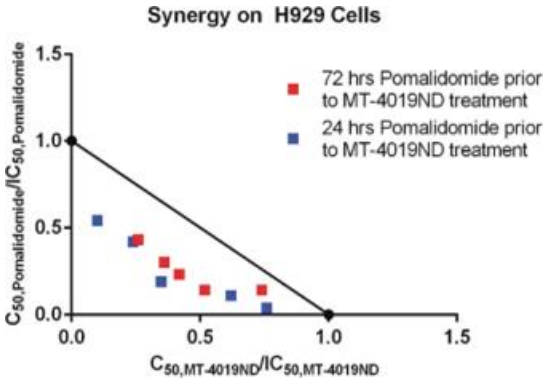


Figure 7. SCID mice were injected intraveneously with 2.5 X 10^6 Daudi cells expressing luciferase. After 1hr, the first dose of MT-4019 or Vehicle was administered intraperitoneally. In total, six doses of MT-4019 were administered over two weeks on a Monday-Wednesday-Friday schedule. Total BLI was measured. Representative imaging for mice treated with Vehicle or 0.5 mg/Kg of MT-4019 at Day 22 are shown in Figure 7B.

MT-4019 Combination Activity

MT-4019 was combined *in vitro* with pomalidomide, an immunomodulatory imide drug, or IMiD, and approved standard of care for refractory multiple myeloma. H929 cells were pre-treated for either 24 or 72 hours with pomalidomide and then treated with MT-4019. An isobologram was calculated to determine whether there was a synergistic effect between the two agents. Strong synergy was demonstrated (Figure 8) which is likely due to both the differences in mechanism of action between the agents as well as the target for MT-4019 as pomalidomide has been shown to increase the expression of CD38 (Boxhammer, *et al*., 2015). The differences in mechanism of cell-kill and the effect of pomalidomide on CD38 expression may make the combination of these agents worth exploring in the clinic.

Figure 8. **Combination Study with Pomalidomide**



Clinical and Regulatory Plan

Molecular has begun to pursue GMP manufacturing for MT-4019. Molecular has substantial expertise with the GMP manufacture of ETBs based on its successful production of MT-3724. Molecular has a non-GMP facility in-house and has conducted seven GMP campaigns with MT-3724. From its experience with MT-3724, Molecular believes it can transfer expression of MT-4019 and complete manufacturing for GLP toxicity studies within six months. Based on expression and process improvements, MT-4019 is expected to have similar or better yields than MT-3724.

Molecular initiated IND-enabling studies to fully characterize MT-4019 based on toxicology and pharmacology in 2017. Molecular expect to initiate a Phase I clinical trial for MT-4019 in 2018. The Phase I trial will be conducted as a single-arm, open-label, multi-center, dose escalation study in patients with CD38+ relapsed/refractory multiple myeloma. Molecular was awarded a $15.2 million grant from CPRIT for the development of MT-4019. Molecular expects this grant to cover the cost of IND-enabling studies and the Phase I and Phase II trials for MT-4019.

Recent Presentations

MT-4019 AACR presentation. Molecular presented data on MT-4019, Molecular's ETB targeting CD38 utilizing Molecular's proprietary de-immunized SLTA, at the AACR Meeting in April 2017. The CD38 receptor has been shown to persist in patients after they stop responding to daratumumab, which is a monoclonal antibody that targets CD38 and then engages the patient's immune system. Monoclonal antibodies attach themselves to multiple myeloma cells and directly kill them and/or signal to the immune system to destroy them. CD38 is a poorly internalizing receptor, rendering it unsuitable for targeting with standard ADCs. Unlike chemotherapy, ADCs are intended to target and kill only the cancer cells and spare healthy cells. ADCs are complex molecules composed of an antibody linked to a biologically active cytotoxic (anticancer) payload or drug. Molecular believes CD38 is an

excellent target for Molecular's ETB technology. After a robust screening process, Molecular identified MT-4019 as its lead ETB to CD38. MT-4019 utilizes Molecular's second-generation ETB scaffold and, as presented at AACR, Molecular demonstrated MT-4019's potent cell-kill activity against CD38-expressing tumor cells with 50% inhibitory concentrations (IC_{50}) achieved at picomolar concentrations of the drug. MT-4019 also demonstrated reduced innate and adaptive immunity in murine and NHP models vs. MT-3724, an ETB with a wild-type SLTA. Molecular believes this level of decreased immunogenicity has not been previously reported for an immunotoxin. Molecular anticipates moving MT-4019 into clinical trials in 2018.

ETB Pipeline

Molecular has launched additional programs against the key targets HER2 and PD-L1. Molecular selected HER2 as a target because of its validated role in breast cancer. Targeting HER2 with different modalities (antibody, small molecule and ADC) has shown clinical benefit, and the target is known to persist after a given modality has failed. The clinical results seen with Kadcyla (an ADC to HER2) strongly suggests that a direct cell-kill approach to HER2 can provide significant benefit and be well tolerated in patients. Molecular believes that attacking HER2-expressing tumor cells with a differentiated mechanism of destruction may provide meaningful clinical benefits, even in patients whose disease has progressed on other HER2-targeted modalities. Molecular's lead HER2 ETB, MT-5111, has shown potent picomolar activity in Kadcyla insensitive HER2+ cell lines and has shown additive or synergistic benefit with Kadcyla *in vitro* in HER2+ cell lines.

PD-L1 is a focal point for immuno-oncology checkpoint antibodies; its expression on tumors is known to downregulate CD8 T-cell activity against tumor cells. In Molecular's ETB program targeting the PD-L1 receptor, Molecular has focused on targeting PD-L1 with a direct cell-kill approach rather than using it to induce an immune response. In addition, Molecular has integrated its Antigen Seeding Technology to the PD-L1 targeting ETB in order to induce targeted tumors to express CMV antigen in context with MHC-I on the tumor cell surface thereby redirecting an endogenous CMV-specific T-cell response to the tumor. Molecular believes that targeting PD-L1 expressing tumors via this dual mechanism of ribosome-inactivation and redirected immunity via CMV-specific T-cell response represents a novel mechanism of action against PD-L1 expressing tumors.

ETB Research & Development Partnerships

Takeda Pharmaceuticals

In October 2016, Molecular entered into a collaboration and option agreement with Millennium Pharmaceuticals, Inc., a wholly owned subsidiary of Takeda Pharmaceutical Company Ltd., or Takeda, to discover and develop CD38-targeting ETBs, which includes MT-4019 for evaluation by Takeda. Under the terms of the agreement, Molecular is responsible for providing to Takeda (i) new ETBs generated using Takeda's proprietary fully human antibodies targeting CD38 and (ii) MT-4019 for *in vitro* and *in vivo* pharmacological and anti-tumor efficacy evaluations. Molecular granted Takeda an exclusive option to negotiate an exclusive worldwide license agreement to develop and commercialize any ETB that may result from this collaboration, including MT-4019. Molecular is entitled to receive up to $2.0 million in technology access fees and cost reimbursement associated with Molecular's performance and completion of Molecular's obligations under the agreement. To date, Molecular has received $2.0 million under this agreement.

In June 2017, Molecular entered into a Multi-Target Collaboration and License Agreement with Takeda, or the Multi-Target Takeda Agreement, in which Molecular will collaborate with Takeda to identify, generate and evaluate engineered toxin bodies, or ETBs, against certain targets designated by Takeda. Takeda will designate up to two targets of interest as the focus of the research. Takeda will provide to Molecular targeting moieties against the designated targets. Molecular will create and characterize ETBs against those targets and provide them to Takeda for further evaluation. Each party grants to the other nonexclusive rights in its intellectual property for purposes of the conduct of the research, and Molecular agrees to work exclusively with Takeda with respect to the designated targets. To date, Molecular has received $1.0 million under this agreement. In December 2017, Takeda designated the two targets for development of ETBs under the research collaboration.

Under the agreement, Takeda has an option to acquire an exclusive license under Molecular's intellectual property to develop, manufacture, commercialize and otherwise exploit ETBs against the designated targets. Upon

exercise of the option, Takeda is obliged to use commercially reasonable efforts to develop and obtain regulatory approval of any licensed ETBs in major market countries, and thereafter to commercialize licensed ETBs in those countries. Molecular is obligated to manufacture ETBs to support research and clinical development through Phase I clinical trials, provided that Takeda can assume manufacturing responsibility at any time.

Molecular received an upfront fee of $1.0 million shortly after execution of the agreement and expects to receive $4.0 million in April 2018 as upfront fees for approval of program plans for the two designated targets. Molecular may receive net milestone payments of $25.0 million in aggregate through the exercise of the option to license ETBs. Post option exercise, Molecular is entitled to receive up to approximately $547.0 million in additional milestone payments through preclinical and clinical development and commercialization. Molecular is also entitled to tiered royalty payments of a mid-single to low-double digit percentage of net sales of any licensed ETBs, subject to certain reductions.

The agreement will expire at the end of the option period for the designated targets if Takeda does not exercise its options, or, following exercise of the option, on the later of the expiration of patent rights claiming the licensed ETB or ten years from first commercial sale of a licensed ETB. The agreement may be terminated sooner by Takeda for convenience or upon a Molecular change of control, or by either party for an uncured material breach of the agreement.

Other Research & Development Collaborations

Henry M. Jackson Foundation

In July 2014, Molecular entered into a non-exclusive license agreement with the Henry M. Jackson Foundation for certain biological materials for use in conjunction with the development of Molecular's lead clinical stage ETB MT-3724. Under the terms of the agreement, Molecular is required to pay the Henry M. Jackson Foundation aggregate payments totaling $110,000 with respect to this license, upon completion of certain clinical milestones.

Manufacturing

Molecular relies on third-party contract manufacturing organizations, or CMOs, to manufacture and supply Molecular with GMP drug substance and drug product materials to support Molecular's clinical trials. . The manufacturing processes for MT-3724, MT-4019 and other preclinical ETB candidates have been developed by Molecular's manufacturing staff. Once a process is developed and defined for an ETB, it is transferred to CMOs to scale-up and optimize for manufacturing that conforms to current GMP, or cGMP, standards. Molecular is building a GMP manufacturing facility located in Austin, TX to supply future clinical trial materials for internal and partnered ETB programs.

Molecular has established well-defined, cost efficient manufacturing under GMP, including bioanalytical, quality control and quality assurance, logistics, distribution and supply chain management. After manufacturing, Molecular's ETB candidates are tested and released by Molecular's analytical and quality systems staff in conjunction with some select contract research organizations, or CROs. The quality control organization performs a series of release assays designed to ensure that the product meets all applicable specifications. Molecular's quality assurance staff also reviews manufacturing and quality control records prior to batch release in an effort to assure conformance with cGMP as mandated by the FDA and foreign regulatory agencies.

Molecular's manufacturing staff is trained and routinely evaluated for conformance to rigorous manufacturing procedures and quality standards. This oversight is intended to ensure compliance with FDA and foreign regulations and to provide consistent ETB output. Molecular's quality control and quality assurance staff is similarly trained and evaluated as part of Molecular's effort to ensure consistency in the testing and release of the product, as well as consistency in materials, equipment and facilities.

For the purposes of internal research and support for Molecular's ongoing collaborations, Molecular has small scale manufacturing capabilities that are sufficient to manufacture drug materials for preclinical research.

Intellectual Property Portfolio

Molecular seeks to protect proprietary rights to its platform technologies through a combination of patents and patent applications, trade secrets and know-how. Molecular's platform technologies include ETBs directed to specific molecular targets, in which a Shiga toxin A subunit construct is linked to an immunoglobulin domains directed to the target, and their uses for treating cancer, killing cancer cells and selectively delivering payload molecules into a target cell. Molecular's platform technologies also include various ETB scaffolds regardless of target, and the Shiga toxin components of ETBs, including improved Shiga toxin A subunit constructs having disruptions of B-cell epitopes and/or T-cell epitopes for reduced immunogenicity when used in ETB scaffolds.

To cover its proprietary technologies and its current pipeline of proprietary ETB products and related methods, such as methods of use, Molecular has filed patent applications representing 13 international patent families, together covering 102 pending regional and national applications worldwide, including 15 pending U.S. patent applications and 87 foreign patent applications currently pending in the regional European Patent Office and nine other jurisdictions outside of the U.S. and Europe (Australia, Canada, China, Hong Kong, Israel, India, Japan, South Korea and Mexico).

Molecular's patent families covering ETBs and modified ETB scaffolds for the targeted killing of cancer cells or for the selective delivery of molecules into a target cell include 12 internationally filed patent families. Patent rights in these patent families, if granted, will expire without extension in 2034-2038. Molecular also has a patent family directed to the screening of large ETB libraries, in which patent rights, if granted, will expire without extension in 2035. With respect to its ETB pipeline, Molecular's lead compound which targets CD20, MT-3724, and pharmaceutical compositions and uses of MT-3724, are covered by two international patent families. Patent rights in these patent families, if granted, will expire without extension in 2034 and 2036. Molecular's current pipeline also includes ETBs which target CD38, HER2, and PD-L1, covered by numerous patent applications, including one international patent family from which patent rights, if granted, will expire without extension in 2036.

As of December 31, 2017, Molecular owned 132 U.S. and foreign patents and patent applications relating to hypoxia-activated prodrugs and their manufacture, formulation and use, including covering the investigational prodrug evofosfamide currently in clinical development. These include 13 issued U.S. patents expiring from 2024 to 2031 and 98 issued foreign patents expiring from 2024 to 2036 (in each case, without extension), as well as 4 pending U.S., 1 pending Patent Cooperation Treaty and 16 pending foreign national patent applications, which, if issued, would in each case expire from 2024 to 2037 (without extension).

Government Regulation

Government authorities in the United States at the federal, state and local level and in other countries regulate, among other things, the research, development, testing, manufacture, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, post-approval monitoring and reporting, marketing and export and import of drug and biological products, such as MT-3724, MT-4019, and any future product candidates. Generally, before a new drug or biologic can be marketed, considerable data demonstrating its quality, safety and efficacy must be obtained, organized into a format specific for each regulatory authority, submitted for review and approved by the regulatory authority.

U.S. Drug Development

In the United States, the FDA regulates drugs under the Federal Food, Drug, and Cosmetic Act, or FDCA, and its implementing regulations and biologics under the FDCA, the Public Health Service Act, or PHSA, and their implementing regulations. Both drugs and biologics also are subject to other federal, state and local statutes and regulations. The process of obtaining regulatory approvals and the subsequent compliance with applicable federal, state, local and foreign statutes and regulations requires 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 post-market may subject an applicant to administrative or judicial sanctions. These sanctions could include, among other actions, the FDA's refusal to approve pending applications, withdrawal of an approval, a clinical hold, untitled or warning letters, product recalls or market withdrawals, product seizures, total or partial suspension of production or distribution, injunctions, fines, refusals of government contracts, restitution,

disgorgement and civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on Molecular. MT-3724, MT-4019 and any ETB product candidates must be approved by the FDA through either a New Drug Application, or NDA, or Biologics Licensing Application, BLA, process before they may be legally marketed in the United States. The process generally involves the following:

- Completion of extensive preclinical studies in accordance with applicable regulations, including studies conducted in accordance with GLP requirements;
- Submission to the FDA of an IND, which must become effective before human clinical trials may begin;
- Approval by an independent institutional review board, or IRB, or ethics committee at each clinical trial site before a trial may be initiated at that site;
- Performance of adequate and well-controlled human clinical trials in accordance with applicable IND regulations, good clinical practice requirements, or GCP, and other clinical trial-related requirements to establish the safety and efficacy of the investigational product for each proposed indication;
- A determination by the FDA within 60 days of its receipt of an NDA or BLA that the NDA or BLA is sufficiently complete to permit a substantial review, in which case the NDA or BLA is filed;
- Satisfactory completion of a FDA pre-approval inspection of the manufacturing facility or facilities where the drug or biologic will be produced to assess compliance with cGMP requirements to assure that the facilities, methods and controls are adequate to preserve the drug or biologic's identity, strength, quality and purity;
- Potential FDA audit of the preclinical and/or clinical trial sites that generated the data in support of the NDA or BLA; and
- FDA review and approval of the NDA or BLA, including consideration of the views of an FDA advisory committee, if one was involved, prior to any commercial marketing or sale of the drug or biologic in the United States.

The preclinical testing, clinical trials and the approval process requires substantial time, effort and financial resources, and Molecular cannot be certain that any approvals for MT-3724, MT-4019 and any future product candidates will be granted on a timely basis, or at all. The data required to support an NDA or BLA are generated in two distinct developmental stages: preclinical and clinical. The preclinical developmental stage generally involves laboratory evaluations of drug chemistry, formulation and stability, as well as studies to evaluate toxicity in animals, which support subsequent clinical testing. The sponsor must submit the results of the preclinical studies, together with manufacturing information, analytical data, any available clinical data or literature and a proposed clinical protocol, to the FDA as part of the IND. An IND is a request for authorization from the FDA to administer an investigational new drug to humans and must become effective before human clinical trials may begin.

The clinical stage of development involves the administration of the investigational product to healthy volunteers or patients under the supervision of qualified investigators, generally physicians not employed by or under the trial sponsor's control, in accordance with GCP requirements, which include the requirement that all research subjects provide their informed consent for their participation in any clinical trial. Clinical trials are conducted under protocols detailing, among other things, the objectives of the clinical trial, dosing procedures, subject selection and exclusion criteria and the parameters to be used to monitor subject safety and assess efficacy. Each protocol, and any subsequent amendments to the protocol, must be submitted to the FDA as part of the IND. Furthermore, each clinical trial must be reviewed and approved by an IRB at each institution at which the clinical trial will be conducted to ensure that the risks to individuals participating in the clinical trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the informed consent form that must be provided to each clinical trial subject or his or her legal representative and must monitor the clinical trial until completed. There also are requirements governing the reporting of ongoing clinical trials and completed clinical trial results to public registries.

A sponsor who wishes to conduct a clinical trial outside of the United States may, but need not, obtain FDA authorization to conduct the clinical trial under an IND. If a foreign clinical trial is not conducted under an IND, the

sponsor may submit data from the clinical trial to the FDA in support of an NDA or BLA. The FDA will accept a well-designed and well-conducted foreign clinical trial not conducted under an IND if the trial was conducted in accordance with GCP requirements, and the FDA is able to validate the data through an onsite inspection if deemed necessary.

Preclinical Studies and IND

Preclinical studies include laboratory evaluation of product chemistry and formulation, as well as in vitro and animal studies to assess the potential for adverse events and in some cases to establish a rationale for therapeutic use. The conduct of preclinical studies is subject to federal regulations and requirements, including GLP regulations. An IND sponsor must submit the results of the preclinical tests, together with manufacturing information, analytical data, any available clinical data or literature and plans for clinical trials, among other things, to the FDA as part of an IND. Some long-term preclinical testing, such as animal tests of effects on reproduction and carcinogenicity, may continue after the IND is submitted. An IND automatically becomes effective 30 days after receipt by the FDA, unless before that time, the FDA raises concerns or questions and places the IND on clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. As a result, submission of an IND may not result in the FDA allowing clinical trials to commence.

Clinical trials

Clinical trials generally are conducted in three sequential phases, known as Phase I, Phase II and Phase III, which may overlap.

- Phase I clinical trials generally involve a small number of healthy volunteers or disease-affected patients who are initially exposed to a single dose and then multiple doses of the product candidate. The primary purpose of these clinical trials is to assess the metabolism, pharmacologic action, side effect tolerability and safety of the drug.
- Phase II clinical trials involve studies in disease-affected patients to determine the dose required to produce the desired benefits. At the same time, safety and further pharmacokinetic and pharmacodynamic information is collected, possible adverse effects and safety risks are identified and a preliminary evaluation of efficacy is conducted.
- Phase III clinical trials generally involve a large number of patients at multiple sites and are designed to provide the data necessary to demonstrate the effectiveness of the product for its intended use, its safety in use and to establish the overall benefit/risk relationship of the product and provide an adequate basis for product approval. These trials may include comparisons with placebo and/or other comparator treatments. The duration of treatment is often extended to mimic the actual use of a product during marketing.

Post-approval trials, sometimes referred to as Phase IV clinical trials, 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 IV clinical trials as a condition of approval of an NDA or BLA.

Progress reports detailing the results of the clinical trials, among other information, must be submitted at least annually to the FDA and written IND safety reports must be submitted to the FDA and the investigators for serious and unexpected suspected adverse events, findings from other studies suggesting a significant risk to humans exposed to the drug, findings from animal or in vitro testing that suggest a significant risk for human subjects and any clinically important increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator brochure.

Phase I, Phase II and Phase III clinical trials may not be completed successfully within any specified period, if at all. The FDA or the sponsor may suspend or terminate 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 or biologic 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 clinical trial sponsor, known as a data safety monitoring board or committee. This group provides authorization for whether a trial may move forward at designated check points based on access to certain data from the trial. Concurrent with clinical trials, companies may perform additional animal studies and develop additional information about the chemistry and physical characteristics of the drug or biologic as well as finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that MT-3724, MT-4019 and any future product candidates do not undergo unacceptable deterioration over their shelf life.

NDA/BLA and FDA Review Process

Following completion of the clinical trials, data are analyzed to assess whether the investigational product is safe and effective for the proposed indicated use or uses. The results of preclinical studies and clinical trials are then submitted to the FDA as part of an NDA or BLA, along with proposed labeling, chemistry and manufacturing information to ensure product quality and other relevant data. In short, the NDA or BLA is a request for approval to market the drug or biologic for one or more specified indications and must contain proof of safety and efficacy for a drug or safety, purity and potency for a biologic. Data may come from company-sponsored clinical trials intended to test the safety and efficacy of a product's use or from a number of alternative sources, including studies initiated by investigators. To support marketing approval, the data submitted must be sufficient in quality and quantity to establish the safety and efficacy of the investigational product to the satisfaction of FDA. FDA approval of an NDA or BLA must be obtained before a drug or biologic may be marketed in the United States.

Under the Prescription Drug User Fee Act, or PDUFA, as amended, each NDA or BLA must be accompanied by a user fee. FDA adjusts the PDUFA user fees on an annual basis. According to the FDA's fee schedule, for fiscal year 2017, the user fee for an application requiring clinical data, such as an NDA or BLA, is $2,038,100. PDUFA also imposes an annual product fee for human drugs and biologics (approximately $97,750) and an annual establishment fee (approximately $0.51 million) on facilities used to manufacture prescription drugs and biologics. Fee waivers or reductions are available in certain circumstances, including a waiver of the application fee for the first application filed by a small business. Additionally, no user fees are assessed on NDAs or BLAs for products designated as orphan drugs, unless the product also includes a non-orphan indication.

The FDA reviews all submitted NDAs and BLAs before it accepts them for filing, or it may refuse to file the application and request additional information. The FDA must make a decision on accepting an NDA or BLA for filing within 60 days of receipt. Once the submission is accepted for filing, the FDA begins an in-depth review of the NDA or BLA. Under the goals and policies agreed to by the FDA under PDUFA, the FDA has 10 months, from the filing date, in which to complete its initial review of a new molecular-entity (NME) or nonNME NDA or original BLA and respond to the applicant, and six months from the filing date of a NME NDA or original BLA designated for priority review. The FDA does not always meet its PDUFA goal dates for standard and priority NDAs or BLAs, and the review process is often extended by FDA requests for additional information or clarification.

Before approving an NDA or BLA, the FDA will conduct a pre-approval inspection of the manufacturing facilities for the new product to determine whether they comply with cGMP requirements. The FDA will not approve the product unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. The FDA also may audit data from clinical trials to ensure compliance with GCP requirements. Additionally, the FDA may refer applications for novel drug products or drug products which present difficult questions of safety or efficacy to an advisory committee, typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved and under what conditions, if any. The FDA is not bound by recommendations of an advisory committee, but it considers such recommendations when making decisions on approval. The FDA likely will reanalyze the clinical trial data, which could result in extensive discussions between the FDA and the applicant during the review process. After the FDA evaluates an NDA or BLA, it will issue an approval letter or a Complete Response Letter. An approval letter authorizes commercial marketing of the drug with specific prescribing information for specific indications. A Complete Response Letter indicates that the review cycle of the application is complete and the application will not be approved in its present form. A Complete Response Letter usually describes all of the specific deficiencies in the NDA or BLA identified

by the FDA. The Complete Response Letter may require additional clinical data, including additional pivotal Phase III clinical trial(s) and/or other significant and time-consuming requirements related to clinical trials, preclinical studies or manufacturing. If a Complete Response Letter is issued, the applicant may either resubmit the NDA or 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 NDA or 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 Molecular interpret the same data.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biological product 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 for which there is no reasonable expectation that the cost of developing and making the product available in the United States for this type of disease or condition will be recovered from sales of the product. Orphan drug designation must be requested before submitting an NDA or BLA. After the FDA grants orphan drug designation, the identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. 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 designation subsequently receives the first FDA approval for the disease or condition for which it has such designation, the product is entitled to orphan drug exclusivity, which means that the FDA may not approve any other applications to market the same drug for the same indication for seven years from the date of such approval, except in limited circumstances, such as a showing of clinical superiority to the product with orphan exclusivity by means of greater effectiveness, greater safety or providing a major contribution to patient care or in instances of drug supply issues. Competitors, however, may receive approval of either a different product for the same indication or the same product for a different indication but that could be used off-label in the orphan indication.

Expedited Development and Review Programs

The FDA has a fast track program that is intended to expedite or facilitate the process for reviewing new drugs and biologics that meet certain criteria. Specifically, new drugs and biologics are eligible for fast track designation if they are intended to treat a serious or life threatening condition and preclinical or clinical data demonstrate the potential to address unmet medical needs for the condition. Fast track designation applies to both the product and the specific indication for which it is being studied. The sponsor can request the FDA to designate the product for fast track status any time before receiving NDA or BLA approval, but ideally no later than the pre-NDA or pre-BLA meeting.

Any product submitted to the FDA for marketing, including under a fast track program, may be eligible for other types of FDA programs intended to expedite development and review, such as priority review and accelerated approval. Any product is eligible for priority review if it treats a serious or life-threatening condition and, if approved, would provide a significant improvement in safety and effectiveness compared to available therapies.

The FDA will attempt to direct additional resources to the evaluation of an application for a new drug or biologic designated for priority review in an effort to facilitate the review. A product may also be eligible for accelerated approval, if it treats a serious or life-threatening condition and generally provides a meaningful advantage over available therapies. In addition, it must demonstrate an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, or IMM, that is reasonably likely to predict an effect on IMM or other clinical benefit. As a condition of approval, the FDA may require that a sponsor of a drug or biologic receiving accelerated approval perform adequate and well-controlled post-marketing clinical trials. If the FDA concludes that a drug or biologic shown to be effective can be safely used only if distribution or use is restricted, it will require such post-marketing restrictions, as it deems necessary to assure safe use of the product.

Additionally, a drug or biologic may be eligible for designation as a breakthrough therapy if the product is intended, alone or in combination with one or more other drugs or biologics, to treat a serious or life-threatening

condition and preliminary clinical evidence indicates that the product may demonstrate substantial improvement over currently approved therapies on one or more clinically significant endpoints. The benefits of breakthrough therapy designation include the same benefits as fast track designation, plus intensive guidance from the FDA to ensure an efficient drug development program. Fast track designation, priority review, accelerated approval and breakthrough therapy designation do not change the standards for approval, but may expedite the development or approval process.

Pediatric Information

Under the Pediatric Research Equity Act, or PREA, an NDA or BLA or supplement to a NDA or BLA must contain data to assess the safety and efficacy of the drug for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The FDA may grant deferrals for submission of pediatric data or full or partial waivers. The Food and Drug Administration Safety and Innovation Act, or FDASIA, amended the FDCA to require that a sponsor who is planning to submit a marketing application for a drug that includes a new active ingredient, new indication, new dosage form, new dosing regimen or new route of administration submit an initial Pediatric Study Plan, or PSP, within 60 days of an end-of-Phase II meeting or, if there is no such meeting, as early as practicable before the initiation of the Phase III or Phase II/III study. The initial PSP must include an outline of the pediatric study or studies that the sponsor plans to conduct, including study objectives and design, age groups, relevant endpoints and statistical approach, or a justification for not including such detailed information, and any request for a deferral of pediatric assessments or a full or partial waiver of the requirement to provide data from pediatric studies along with supporting information. The FDA and the sponsor must reach an agreement on the PSP. A sponsor can submit amendments to an agreed-upon initial PSP at any time if changes to the pediatric plan need to be considered based on data collected from preclinical studies, early phase clinical trials and/or other clinical development programs.

Post-marketing Requirements

Following approval of a new product, the manufacturer and the approved product are subject to continuing regulation by the FDA, including, among other things, monitoring and record-keeping activities, reporting of adverse experiences, and complying with promotion and advertising requirements, which include restrictions on promoting approved drugs for unapproved uses or patient populations (known as "off-label use"). Although physicians may prescribe legally available drugs for off-label uses, manufacturers may not market or promote such uses. Prescription drug promotional materials must be submitted to the FDA in conjunction with their first use. Further, if there are any modifications to the drug or biologic, including changes in indications, labeling or manufacturing processes or facilities, the applicant may be required to submit and obtain FDA approval of a new NDA/BLA or NDA/BLA supplement, which may require additional data from preclinical studies or clinical trials.

The FDA may also place other conditions on approvals including the requirement for REMS to assure the safe use of the product. If the FDA concludes a REMS is needed, the sponsor of the NDA or BLA must submit a proposed REMS. The FDA will not approve the NDA or 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. Product approvals may be withdrawn for non-compliance with regulatory standards or if problems occur following initial marketing. FDA regulations require that products be manufactured in specific approved facilities and in accordance with cGMPs. Molecular rely, and expect to continue to rely, on third parties for the production of clinical and commercial quantities of Molecular's products in accordance with cGMPs. These manufacturers must comply with cGMPs that require, among other things, quality control and quality assurance, the maintenance of records and documentation and the obligation to investigate and correct any deviations from cGMP. Manufacturers and other entities involved in the manufacture and distribution of approved drugs or biologics 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 requirements and other laws. Accordingly, manufacturers must continue to expend time, money and effort in the area of production and quality control to maintain cGMP compliance. The discovery of violative conditions, including failure to conform to cGMPs, could result in enforcement actions, and the discovery of problems with a product after approval may result in restrictions on a product, manufacturer or holder of an approved NDA or BLA, including recall.

Companion Diagnostics and Complementary Diagnostics

Molecular believes that the success of Molecular's product candidates may depend, in part, on the development and commercialization of either a companion diagnostic or complementary diagnostic. Companion diagnostics and complementary diagnostics can identify patients who are most likely to benefit from a particular therapeutic product; identify patients likely to be at increased risk for serious side effects as a result of treatment with a particular therapeutic product; or monitor response to treatment with a particular therapeutic product for the purpose of adjusting treatment to achieve improved safety or effectiveness. Companion diagnostics and complementary diagnostics are regulated as medical devices by the FDA. The level of risk combined with available controls to mitigate risk determines whether a companion diagnostic device requires Premarket Approval Application, or PMA, approval or is cleared through the 510(k) premarket notification process. For a novel therapeutic product for which a companion diagnostic device is essential for the safe and effective use of the product, the companion diagnostic device should be developed and approved or 510(k)-cleared contemporaneously with the therapeutic. The use of the companion diagnostic device will be stipulated in the labeling of the therapeutic product.

Other Regulatory Matters

Manufacturing, sales, promotion and other activities following product approval may also be subject to regulation by other regulatory authorities in the United States in addition to the FDA, Depending on the nature of the product, those authorities may include the CMS, other divisions of the Department of Health and Human Services, the Department of Justice, the Drug Enforcement Administration, the Consumer Product Safety Commission, the Federal Trade Commission, OSHA, the Environmental Protection Agency and state and local governments.

For example, in the United States, sales and marketing must comply with state and federal fraud and abuse laws. These laws include the federal Anti-Kickback Statute, which makes it illegal for any person, including a prescription drug manufacturer (or a party acting on its behalf), to knowingly and willfully solicit, receive, offer or pay any remuneration that is intended to induce or reward referrals, including the purchase, recommendation, order or prescription of a particular drug, for which payment may be made under a federal healthcare program, such as Medicare or Medicaid. Violations of this law are punishable by up to five years in prison, criminal fines, administrative civil money penalties and exclusion from participation in federal healthcare programs. In addition, the Patient Protection and Affordable Care Act, or ACA, among other things, amends the intent requirement of the federal Anti-Kickback Statute and criminal healthcare fraud statutes created by the Health Insurance Portability and Accountability Act of 1996, or HIPAA. A person or entity no longer needs to have actual knowledge of the 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.

Pricing and rebate programs must comply with the Medicaid rebate requirements of the U.S. Omnibus Budget Reconciliation Act of 1990 and more recent requirements in the ACA. If products are made available to authorized users of the Federal Supply Schedule of the General Services Administration, additional laws and requirements apply. Products must meet applicable child-resistant packaging requirements under the U.S. Poison Prevention Packaging Act. Manufacturing, sales, promotion and other activities also are potentially subject to federal and state consumer protection and unfair competition laws.

The distribution of pharmaceutical products is subject to additional requirements and regulations, including extensive record-keeping, licensing, storage and security requirements intended to prevent the unauthorized sale of pharmaceutical products.

The failure to comply with any of these laws or regulatory requirements subjects firms to possible legal or regulatory action. Depending on the circumstances, failure to meet applicable regulatory requirements can result in criminal prosecution, fines or other penalties, injunctions, requests for recall, seizure of products, total or partial suspension of production, denial or withdrawal of product approvals or refusal to allow a firm to enter into supply contracts, including government contracts. Any action against Molecular for violation of these laws, even if Molecular successfully defend against it, could cause Molecular to incur significant legal expenses and divert Molecular's management's attention from the operation of Molecular's business. Prohibitions or restrictions on sales

or withdrawal of future products marketed by Molecular could materially affect Molecular's business in an adverse way.

Changes in regulations, statutes or the interpretation of existing regulations could impact Molecular's business in the future by requiring, for example: (i) changes to Molecular's manufacturing arrangements; (ii) additions or modifications to product labeling; (iii) the recall or discontinuation of Molecular's products; or (iv) additional record-keeping requirements. If any such changes were to be imposed, they could adversely affect the operation of Molecular's business.

U.S. Patent-term Restoration and Marketing Exclusivity

Depending upon the timing, duration and specifics of FDA approval of MT-3724, MT-4019 and any future product candidates, some of Molecular's U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, commonly referred to as the Hatch-Waxman Amendments. The Hatch-Waxman Amendments permit restoration of the patent term of up to five years as compensation for patent term lost during product development and FDA regulatory review process. Patent-term restoration, however, 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 an NDA or BLA plus the time between the submission date of an NDA or BLA and the approval of that application, except that the review period is reduced by any time during which the applicant failed to exercise due diligence. Only one patent applicable to an approved drug is eligible for the extension and the application for the extension must be submitted prior to the expiration of the patent. The U.S. PTO, in consultation with the FDA, reviews and approves the application for any patent term extension or restoration. In the future, Molecular may apply for restoration of patent term for Molecular's currently owned or licensed patents to add patent life beyond its current expiration date, depending on the expected length of the clinical trials and other factors involved in the filing of the relevant NDA or BLA.

Market exclusivity provisions under the FDCA also can delay the submission or the approval of certain applications. The FDCA provides a five-year period of non-patent marketing exclusivity within the United States to the first applicant to gain approval of a NDA for a new chemical entity. A drug is a new chemical entity if the FDA has not previously approved any other new drug containing the same active moiety, which is the molecule or ion responsible for the action of the drug substance. During the exclusivity period, the FDA may not accept for review an abbreviated new drug application, or ANDA, or a 505(b)(2) NDA submitted by another company for another version of such drug where the applicant does not own or have a legal right of reference to all the data required for approval. However, an application may be submitted after four years if it contains a certification of patent invalidity or non-infringement. The FDCA also provides three years of marketing exclusivity for a NDA, 505(b)(2) NDA or supplement to an existing NDA if new clinical investigations, other than bioavailability studies, that were conducted or sponsored by the applicant are deemed by the FDA to be essential to the approval of the application, for example, new indications, dosages or strengths of an existing drug. This three-year exclusivity covers only the conditions of use associated with the new clinical investigations and does not prohibit the FDA from approving ANDAs for drugs containing the original active agent. Five-year and three-year exclusivity will not delay the submission or approval of a full NDA. However, an applicant submitting a full NDA would be required to conduct or obtain a right of reference to all of the preclinical studies and adequate and well-controlled clinical trials necessary to demonstrate safety and effectiveness.

An abbreviated approval pathway for biological products shown to be similar to, or interchangeable with, an FDA-licensed reference biological product was created by the Biologics Price Competition and Innovation Act of 2009, or BPCIA, as part of the ACA. This amendment to the PHSA, in part, attempts to minimize duplicative testing. Biosimilarity, which requires that the biological product be highly similar to the reference product notwithstanding minor differences in clinically inactive components and that there be no clinically meaningful differences between the product and the reference product in terms of safety, purity and potency, can be shown through analytical studies, animal studies and a clinical trial or trials. Interchangeability requires that a biological product be biosimilar to the reference product and that the product can be expected to produce the same clinical results as the reference product in any given patient and, for products administered multiple times to an individual, that the product and the reference product may be alternated or switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biological

product without such alternation or switch. Complexities associated with the larger, and often more complex, structure of biological products as compared to small molecule drugs, as well as the processes by which such products are manufactured, pose significant hurdles to implementation that are still being worked out by the FDA.

A reference biological product is granted 12 years of data exclusivity from the time of first licensure of the product, and the FDA will not accept an application for a biosimilar or interchangeable product based on the reference biological product until four years after the date of first licensure of the reference product. "First licensure" typically means the initial date the particular product at issue was licensed in the United States. Date of first licensure does not include the date of licensure of (and a new period of exclusivity is not available for) a biological product if the licensure is for a supplement for the biological product or for a subsequent application by the same sponsor or manufacturer of the biological product (or licensor, predecessor in interest, or other related entity) for a change (not including a modification to the structure of the biological product) that results in a new indication, route of administration, dosing schedule, dosage form, delivery system, delivery device or strength, or for a modification to the structure of the biological product that does not result in a change in safety, purity, or potency. Whether a subsequent application, if approved, warrants exclusivity as the "first licensure" of a biological product is determined on a case-by-case basis with data submitted by the sponsor.

Pediatric exclusivity is another type of regulatory market exclusivity in the United States. Pediatric exclusivity, if granted, adds six months to existing regulatory exclusivity periods. This six-month exclusivity, which attaches to both the twelve-year and four-year exclusivity periods for reference biologics, may be granted based on the voluntary completion of a pediatric trial in accordance with an FDA-issued "Written Request" for such a trial. Furthermore, a biological product seeking licensure as biosimilar to or interchangeable with a reference product indicated for a rare disease or condition and granted seven years of orphan drug exclusivity may not be licensed by the FDA for the protected orphan indication until after the expiration of the seven-year orphan drug exclusivity period or the 12-year reference product exclusivity, whichever is later.

European Union Drug Development

In the European Union, Molecular's future products also may be subject to extensive regulatory requirements. As in the United States, drugs, which are referred to as medicinal products can be marketed only if a marketing authorization from the competent regulatory agencies has been obtained.

Similar to the United States, the various phases of preclinical and clinical research in the European Union are subject to significant regulatory controls. Although the EU Clinical Trials Directive 2001/20/EC has sought to harmonize the EU clinical trials regulatory framework, setting out common rules for the control and authorization of clinical trials in the EU, the EU Member States have transposed and applied the provisions of the Directive differently. This has led to significant variations in the member state regimes. Under the current regime, before a clinical trial can be initiated, a clinical trial application must be approved in each of the EU countries where the trial is to be conducted by two distinct bodies: the National Competent Authority, or NCA, and one or more Ethics Committees, or ECs. Under the current regime all suspected unexpected serious adverse reactions to the investigated drug that occur during the clinical trial have to be reported to the NCA and ECs of the Member State where they occurred. The EU clinical trials legislation currently is undergoing a transition process mainly aimed at harmonizing and streamlining clinical-trial authorization, simplifying adverse-event reporting procedures, improving the supervision of clinical trials and increasing their transparency.

European Union Drug Review and Approval

In the European Economic Area, or EEA, which is comprised of the 27 Member States of the European Union (including Norway and excluding Croatia), Iceland and Liechtenstein, medicinal products can only be commercialized after obtaining a Marketing Authorization, or MA. There are two types of marketing authorizations.

- The Community MA is issued by the European Commission through the Centralized Procedure, based on the opinion of the Committee for Medicinal Products for Human Use, or CHMP, of the European Medicines Agency, or EMA, and is valid throughout the entire territory of the EEA. The Centralized Procedure is mandatory for certain types of products, such as biotechnology medicinal products, orphan medicinal products, advanced-therapy medicines such as gene-therapy, somatic cell-therapy or tissue-

engineered medicines and medicinal products containing a new active substance indicated for the treatment of HIV, AIDS, cancer, neurodegenerative disorders, diabetes, auto-immune and other immune dysfunctions and viral diseases. The Centralized Procedure is optional for products containing a new active substance not yet authorized in the EEA, or for products that constitute a significant therapeutic, scientific or technical innovation or which are in the interest of public health in the EU.

- National MAs, which are issued by the competent authorities of the Member States of the EEA and only cover their respective territory, are available for products not falling within the mandatory scope of the Centralized Procedure. Where a product has already been authorized for marketing in a Member State of the EEA, this National MA can be recognized in another Member States through the Mutual Recognition Procedure. If the product has not received a National MA in any Member State at the time of application, it can be approved simultaneously in various Member States through the Decentralized Procedure. Under the Decentralized Procedure an identical dossier is submitted to the competent authorities of each of the Member States in which the MA is sought, one of which is selected by the applicant as the Reference Member State, or RMS. The competent authority of the RMS prepares a draft assessment report, a draft summary of the product characteristics, or SPC, and a draft of the labeling and package leaflet, which are sent to the other Member States (referred to as the Member States Concerned) for their approval. If the Member States Concerned raise no objections, based on a potential serious risk to public health, to the assessment, SPC, labeling, or packaging proposed by the RMS, the product is subsequently granted a national MA in all the Member States (i.e., in the RMS and the Member States Concerned).

Under the above described procedures, before granting the MA, the EMA or the competent authorities of the Member States of the EEA make an assessment of the risk-benefit balance of the product on the basis of scientific criteria concerning its quality, safety and efficacy.

European Union New Chemical Entity Exclusivity

In the European Union, new chemical entities, sometimes referred to as new active substances, qualify for eight years of data exclusivity upon marketing authorization and an additional two years of market exclusivity. The data exclusivity, if granted, prevents regulatory authorities in the European Union from referencing the innovator's data to assess a generic application for eight years, after which generic marketing authorization can be submitted, and the innovator's data may be referenced, but not approved for two years. The overall ten-year period will be extended to a maximum of 11 years if, during the first eight years of those 10 years, the marketing authorization holder obtains an authorization for one or more new therapeutic indications which, during the scientific evaluation prior to their authorization, are determined to bring a significant clinical benefit in comparison with currently approved therapies.

European Union Orphan Designation and Exclusivity

In the European Union, the EMA's Committee for Orphan Medicinal Products grants orphan drug designation to promote the development of products that are intended for the diagnosis, prevention or treatment of life-threatening or chronically debilitating conditions affecting not more than 5 in 10,000 persons in the European Union community (or where it is unlikely that the development of the medicine would generate sufficient return to justify the investment) and for which no satisfactory method of diagnosis, prevention or treatment has been authorized (or, if a method exists, the product would be a significant benefit to those affected).

In the European Union, orphan drug designation entitles a party to financial incentives such as reduction of fees or fee waivers and 10 years of market exclusivity is granted following medicinal product approval. This period may be reduced to six years if the orphan drug designation criteria are no longer met, including where it is shown that the product is sufficiently profitable not to justify maintenance of market exclusivity. Orphan drug designation must be requested before submitting an application for marketing approval. Orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review and approval process.

Rest of the World Regulation

For other countries outside of the European Union and the United States, such as countries in Eastern Europe, Latin America or Asia, the requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary from country to country. Additionally, the clinical trials must be conducted in accordance with GCP requirements and the applicable regulatory requirements and the ethical principles that have their origin in the Declaration of Helsinki.

If Molecular fail to comply with applicable foreign regulatory requirements, Molecular may be subject to, among other things, fines, suspension or withdrawal of regulatory approvals, product recalls, seizure of products, operating restrictions and criminal prosecution.

Reimbursement

Sales of Molecular's products will depend, in part, on the extent to which Molecular's products will be covered by third-party payors, such as government health programs, commercial insurance and managed care organizations. In the United States no uniform policy of coverage and reimbursement for drug or biological products exists. Accordingly, decisions regarding the extent of coverage and amount of reimbursement to be provided for any of Molecular's products will be made on a payor-by-payor basis. As a result, the coverage determination process is often a time-consuming and costly process that will require Molecular to provide scientific and clinical support for the use of Molecular's products to each payor separately, with no assurance that coverage and adequate reimbursement will be obtained.

The United States government, state legislatures and foreign governments have shown significant interest in implementing cost containment programs to limit the growth of government-paid health care costs, including price-controls, restrictions on reimbursement and requirements for substitution of generic products for branded prescription drugs. For example, the ACA contains provisions that may reduce the profitability of drug products through increased rebates for drugs reimbursed by Medicaid programs, extension of Medicaid rebates to Medicaid managed care plans, mandatory discounts for certain Medicare Part D beneficiaries and annual fees based on pharmaceutical companies' share of sales to federal health care programs. Adoption of general controls and measures, coupled with the tightening of restrictive policies in jurisdictions with existing controls and measures, could limit payments for pharmaceutical drugs. The Medicaid Drug Rebate Program requires pharmaceutical manufacturers to enter into and have in effect a national rebate agreement with the Secretary of the Department of Health and Human Services as a condition for states to receive federal matching funds for the manufacturer's outpatient drugs furnished to Medicaid patients. The ACA made several changes to the Medicaid Drug Rebate Program, including increasing pharmaceutical manufacturers' rebate liability by raising the minimum basic Medicaid rebate on most branded prescription drugs from 15.1% of average manufacturer price, or AMP, to 23.1% of AMP and adding a new rebate calculation for "line extensions" (i.e., new formulations, such as extended release formulations) of solid oral dosage forms of branded products, as well as potentially impacting their rebate liability by modifying the statutory definition of AMP. The ACA also expanded the universe of Medicaid utilization subject to drug rebates by requiring pharmaceutical manufacturers to pay rebates on Medicaid managed care utilization and by enlarging the population potentially eligible for Medicaid drug benefits. Congress and President Trump have expressed their intention to repeal or repeal and replace the ACA. If that is done, many if not all of the provisions of the ACA may no longer apply to prescription drugs.

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003, or the MMA, established the Medicare Part D program to provide a voluntary prescription drug benefit to Medicare beneficiaries. Under Part D, Medicare beneficiaries may enroll in prescription drug plans offered by private entities that provide coverage of outpatient prescription drugs. Unlike Medicare Part A and B, Part D coverage is not standardized. While all Medicare drug plans must give at least a standard level of coverage set by Medicare, 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. However, Part D prescription drug formularies must include drugs within each therapeutic category and class of covered Part D drugs, though not necessarily all the drugs in each category or class. Any formulary used by a Part D prescription drug plan must be developed and reviewed by a pharmacy and therapeutic committee. Government payment for some of the costs of prescription drugs may increase demand for products for which Molecular receive marketing approval. However,

any negotiated prices for Molecular's products covered by a Part D prescription drug planlikely will be lower than the prices Molecular might otherwise obtain. Moreover, while the MMA applies only to drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own payment rates. Any reduction in payment that results from the MMA may result in a similar reduction in payments from non-governmental payors.

For a drug product to receive federal reimbursement under the Medicaid or Medicare Part B programs or to be sold directly to U.S. government agencies, the manufacturer must extend discounts to entities eligible to participate in the 340B drug pricing program. The required 340B discount on a given product is calculated based on the AMP and Medicaid rebate amounts reported by the manufacturer. As of 2010, the ACA expanded the types of entities eligible to receive discounted 340B pricing, although, under the current state of the law, with the exception of children's hospitals, these newly eligible entities will not be eligible to receive discounted 340B pricing on orphan drugs. In addition, as 340B drug pricing is determined based on AMP and Medicaid rebate data, the revisions to the Medicaid rebate formula and AMP definition described above could cause the required 340B discount to increase.

As noted above, the marketability of any products for which Molecular receive regulatory approval for commercial sale may suffer if the government and third-party payors fail to provide adequate coverage and reimbursement. An increasing emphasis on cost containment measures in the United States has increased and Molecular expect will continue to increase the pressure on pharmaceutical pricing. Coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which Molecular receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

In addition, in most foreign countries, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing and reimbursement 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 the profitability of the company 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 Molecular's products. Historically, products launched in the European Union do not follow price structures of the United States and generally prices tend to be significantly lower.

Competition

Molecular competes directly with companies that focus on oncology as well as companies dedicating their resources to novel forms of cancer therapies. Molecular also faces competition from academic research institutions, governmental agencies and various other public and private research institutions. With the proliferation of new drugs and therapies into oncology, Molecular expects to face increasingly intense competition as new technologies become available. Any ETB candidates that Molecular successfully develops and commercializes will compete with existing therapies and new therapies that may become available in the future.

Many of Molecular's competitors have significantly greater financial, manufacturing, marketing, drug development, technical and human resources than Molecular does. Mergers and acquisitions in the pharmaceutical, biotechnology and diagnostic industries may result in even more resources being concentrated among a smaller number of Molecular's competitors. Smaller or early-stage companies also may prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with Molecular in recruiting and retaining top qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, Molecular's programs.

The key competitive factors affecting the success of all of Molecular's ETB candidates, if approved, are likely to be their efficacy, safety, dosing convenience, price, the effectiveness of companion diagnostics in guiding the use of related therapeutics, the level of generic competition and the availability of reimbursement from government and other third-party payors.

Molecular's commercial opportunity could be reduced or eliminated if its competitors develop and commercialize products that are safer, more effective, less expensive, more convenient or easier to administer, or have fewer or less severe effects than any products that Molecular may develop. Molecular's competitors also may obtain FDA, EMA or other regulatory approval for their products more rapidly than Molecular may obtain approval for its products, which could result in Molecular's competitors establishing a strong market position before Molecular is able to enter the market. Even if Molecular's ETB candidates achieve marketing approval, they may be priced at a significant premium over competitive products if any have been approved by then.

In addition to currently marketed therapies, there are also a number of products in late-stage clinical development directed to the same biological targets as Molecular's programs, including antibodies, antibody drug conjugates and bi-specific antibodies.

- Approved antibody-based products targeting CD20 include rituximab (Genentech/Roche), ofatumumab (Novartis), obinutuzumab (Genentech/Roche) and ibritumomab tiuxetan (Spectrum Pharmaceuticals).
- Antibody-based products, including bi-specific antibodies, and antibody targeting T-cell approaches targeting CD20 in development include veltuzumab (Immunomedics), ocaratuzumab (Mentrik Biotech), REGN1979 (Regeneron Pharmaceuticals), RG7828 (Genentech/Roche), XmAb13676 (Novartis/Xencor) and CD3-CD20 Duobody (Genmab), ATTCK20 (Unum Therapeutics).
- The approved antibody-based product targeting CD38 is daratumumab (Janssen/Genmab).
- Antibody-based products, including bi-specific antibodies, targeting CD38 in development include MOR02 (Morphosys), isatuximab (Sanofi) and XmAb13551 (Amgen/Xencor).
- Approved antibody-based products, including antibody drug conjugates, targeting HER2 include trastuzumab, pertuzumab, and trastuzumab emtansine (all from Genentech/Roche) and DS-8201 (Daiichi Sankyo).
- Antibody-based products, including bi-specific antibodies, targeting HER2 in development include margetuximab (Macrogenics), MEDI4276 (AstraZeneca), MM-111 (Merrimack Pharmaceuticals), FS102 (Bristol-Myers Squibb/F-star) and MCLA-128 (Merus).
- Approved antibody-based products targeting PD-L1 include atezolizumab (Genentech/Roche) and avelumab (Merck KGaA/Pfizer).
- Antibody-based products targeting PD-L1 in development include durvalumab (AstraZeneca), LY3300054 (Lilly) and BMS-936559 (Bristol-Myers Squibb).

Revenues and Information About Geographic Areas

In the year ended December 31, 2017, 44% of the Company's revenues were received from entities and organizations located in the United States and 56% were received from a Japan entity. In the year ended December 31, 2015, 100% of the Company's revenues were received from an organization located in the United States. Further information on our research and development agreements are included in Note 4 to the consolidated financial statements. All of our long-lived assets and IPR&D are maintained in the United States.

Employees

As of December 31, 2017, Molecular had 38 full-time employees. 16 of Molecular's employees have Ph.D., PharmD or M.D. degrees, and 9 of Molecular's employees are engaged in research and development activities. None of Molecular's employees are subject to a collective bargaining agreement. Molecular believes that Molecular has good relations with Molecular's employees.

Corporate Information

On August 1, 2017, we completed our business combination with Molecular Templates OpCo, Inc., or what was then known as "Molecular Templates, Inc." ("Private Molecular"; formerly D5 Pharma Inc., a Delaware corporation incorporated on February 19, 2009), in accordance with the terms of an Agreement and Plan of Merger

and Reorganization (the "Merger Agreement"), dated as of March 16, 2017, by and amongus (formerly known as Threshold Pharmaceuticals, Inc. (Nasdaq: THLD) ("Threshold"), Trojan Merger Sub, Inc. ("Merger Sub"),our wholly owned subsidiary, and Private Molecular, pursuant to which Merger Sub merged with and intoPrivate Molecular, with Private Molecular surviving as our wholly owned subsidiary, now "Molecular Templates OpCo, Inc." (the "Merger").

On August 1, 2017, in connection with and prior to the consummation of the Merger, we effected an 11-for-1 reverse stock split of the shares of our common stock. Each outstanding share of Private Molecular common stock was converted into 7.7844 shares of common stock of the post-Merger combined company. As a result, we issued approximately 11.7 million shares of our common stock to the stockholders of Private Molecular in exchange for shares of common stock of Private Molecular. Upon the consummation of the Merger, we changed our name to "Molecular Templates, Inc." For accounting purposes, Private Molecular is considered to have acquired Threshold in the Merger.

Immediately after the Merger, there were approximately 18,164,843 shares of our common stock outstanding. Immediately after the Merger, the former Private Molecular stockholders, warrant holders and option holders owned approximately 65.6% of our fully-diluted common stock, with the Threshold's stockholders and warrant holders immediately prior to the Merger, whose warrants and shares of the common stock remain outstanding after the Merger, owning approximately 34.4% of our fully-diluted common stock.

Molecular and Molecular Templates OpCo, Inc. each have a principal executive office at 9301 Amberglen Boulevard, Suite 100, Austin, Texas 78729 and telephone number (512) 869-1555.

Available Information

We file electronically with the Securities and Exchange Commission, or SEC, our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K pursuant to Section 13(a) or 15(d) of the Exchange Act. The SEC maintains an Internet site that contains reports, proxy information and information statements, and other information regarding issuers that file electronically with the SEC. The address of that website is http://www.sec.gov. The materials are also available at the SEC's Public Reference Room, located at 100 F Street, Washington, D.C. 20549. The public may obtain information through the public reference room by calling the SEC at 1-800-SEC-0330.

You may obtain a free copy of our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K and amendments to those reports on the day of filing with the SEC on our website at http://www.mtem.com or by contacting the Investor Relations Department at our corporate offices by calling (512) 869-1555. The information contained in, or that can be accessed through, our website is not part of, and is not incorporated into, this annual report on Form 10-K.

ITEM 1A. RISK FACTORS

We have identified the following risks and uncertainties that may have a material adverse effect on our business, financial condition or results of operations. The risks described below are not the only ones we face. Additional risks not presently known to us or that we currently believe are immaterial may also significantly impair our business operations. Our business could be harmed by any of these risks. Investing in our common stock involves a high degree of risk. You should carefully consider the risks and uncertainties described below and all information contained in this report before you decide to purchase our common stock. If any of the possible adverse events described below actually occurs, we may be unable to conduct our business as currently planned and our financial condition and operating results could be harmed. In addition, the trading price of our common stock could decline due to the occurrence of any of the events described below, and you may lose all or part of your investment. In assessing these risks, you should refer to the other information contained in this Annual Report on Form 10-K, including our consolidated financial statements and related notes.

Risks Related to Ownership of our Common Stock

The market price of our common stock is expected to be volatile, and the market price of the common stock may drop.

The market price of our common stock could be subject to significant fluctuations. Market prices for securities of early-stage pharmaceutical, biotechnology and other life sciences companies have historically been particularly volatile. Some of the factors that may cause the market price of our common stock to fluctuate include:

- our ability to obtain regulatory approvals for MT-3724 or other product candidates, and delays or failures to obtain such approvals;
- failure of any of our product candidates, if approved, to achieve commercial success;
- failure to maintain our existing third-party license and supply agreements;
- failure by us or our licensors to prosecute, maintain, or enforce our intellectual property rights;
- changes in laws or regulations applicable to our product candidates;
- any inability to obtain adequate supply of our product candidates or the inability to do so at acceptable prices;
- adverse regulatory authority decisions;
- introduction of new products, services or technologies by our competitors;
- failure to meet or exceed financial and development projections we may provide to the public;
- failure to meet or exceed the financial and development projections of the investment community;
- the perception of the pharmaceutical industry by the public, legislatures, regulators and the investment community;
- announcements of significant acquisitions, strategic collaborations, joint ventures or capital commitments by us or our competitors;
- disputes or other developments relating to proprietary rights, including patents, litigation matters, and our ability to obtain patent protection for our technologies;
- additions or departures of key personnel;
- significant lawsuits, including patent or stockholder litigation;
- if securities or industry analysts do not publish research or reports about our business, or if they issue any adverse or misleading opinions regarding our business and stock;
- changes in the market valuations of similar companies;
- general market or macroeconomic conditions;
- sales of our common stock by us or our stockholders in the future;
- trading volume of our common stock;
- announcements by commercial partners or competitors of new commercial products, clinical progress or the lack thereof, significant contracts, commercial relationships or capital commitments;
- adverse publicity relating to ETB therapeutics generally, including with respect to other products and potential products in such markets;
- the introduction of technological innovations or new therapies that compete with our potential products;
- changes in the structure of health care payment systems; and
- period-to-period fluctuations in our financial results.

Moreover, the stock markets in general have experienced substantial volatility that has often been unrelated to the operating performance of individual companies. These broad market fluctuations may also adversely affect the trading price of our common stock.

In the past, following periods of volatility in the market price of a company's securities, stockholders have often instituted class action securities litigation against those companies. Such litigation, if instituted, could result in substantial costs and diversion of management attention and resources, which could significantly harm our profitability and reputation.

Additionally, a decrease in our stock price may cause our common stock to no longer satisfy the continued listing standards of The Nasdaq Capital Market. If we are not able to maintain the requirements for listing on The Nasdaq Capital Market, we could be delisted, which could have a materially adverse effect on our ability to raise additional funds as well as the price and liquidity of our common stock.

Future sales of shares by existing stockholders could cause our stock price to decline.

If our existing stockholders 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 21, 2018, we had outstanding a total of approximately 27,058,244 shares of common stock.

Our certificate of incorporation, bylaws and Delaware law contain provisions that could discourage another company from acquiring us and may prevent attempts by our stockholders to replace or remove our current management.

Provisions of Delaware law, where we are incorporated, our certificate of incorporation and bylaws may discourage, delay or prevent a merger or acquisition that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares. In addition, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace or remove our board of directors. These provisions include:

- authorizing the issuance of "blank check" preferred stock without any need for action by stockholders;
- providing for a classified board of directors with staggered terms;
- requiring supermajority stockholder voting to effect certain amendments to our certificate of incorporation and bylaws;
- eliminating the ability of stockholders to call special meetings of stockholders;
- prohibiting stockholder action by written consent; and
- establishing advance notice requirements for nominations for election to our board of directors or for proposing matters that can be acted on by stockholders at stockholder meetings.

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our amended and restated certificate of incorporation and amended and restated bylaws provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law.

In addition, as permitted by Section 145 of the Delaware General Corporation Law, or the DGCL, our amended and restated bylaws and our indemnification agreements that we have entered into with our directors and officers provide that:

- We will indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a

manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful.

- We may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law.
- We are required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification.
- The rights conferred in our amended and restated bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons.
- We may not retroactively amend our amended and restated bylaw provisions to reduce our indemnification obligations to directors, officers, employees and agents.

We have never paid dividends on our common stock, and we do not anticipate paying any cash dividends in 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 the development and growth of our business. As a result, capital appreciation, if any, of our common stock will be our stockholders' sole source of gain for the foreseeable future.

We incur costs and demands upon management as a result of complying with the laws and regulations affecting public companies.

We incur significant legal, accounting and other expenses that Private Molecular did not incur as a private company, including costs associated with public company reporting requirements. We also incur costs associated with corporate governance requirements, including requirements under the Sarbanes-Oxley Act, as well as new implemented by the SEC and Nasdaq. These rules and regulations are expected to increase our legal and financial compliance costs and to make some activities more time consuming and costly. For example, our management team includes certain executive officers of Private Molecular prior to the Merger, some of whom have not previously managed and operated a public company. These executive officers and other personnel will need to devote substantial time to gaining expertise regarding operations as a public company and compliance with applicable laws and regulations. These rules and regulations also may make it difficult and expensive for us to obtain directors' and officers' liability insurance. As a result, it may be more difficult for us to attract and retain qualified individuals to serve on our board of directors or as executive officers, which may adversely affect investor confidence in us and could cause our business or stock price to suffer.

Our bylaws provide that the Court of Chancery of the State of Delaware is the exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or other employees.

Our bylaws provide that the Court of Chancery of the State of Delaware is the sole and exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, any action asserting a claim against us arising pursuant to any provisions of the DGCL, our certificate of incorporation or our bylaws, or any action asserting a claim against us that is governed by the internal affairs doctrine. The choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. If a court were to find the choice of forum provision contained in the bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions.

An active trading market for our common stock may not develop.

Prior to the Merger, there had been no public market for Private Molecular common stock. An active trading market for our shares of common stock may not be sustained. If an active market for our common stock is not sustained, it could put downward pressure on the market price of our common stock and thereby affect the ability of stockholders to sell their shares.

Our executive officers, directors and principal stockholders have the ability to control or significantly influence all matters submitted to our stockholders for approval.

As of December 31, 2017, our principal stockholders beneficially own, in the aggregate, approximately 70.0% of our outstanding shares of common stock. As a result, if these stockholders were to choose to act together, they would be able to control or significantly influence all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, would control or significantly influence the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. Within this group, Santé Health Ventures I, L.P. and its affiliates own approximately 32.6% of our shares, and Longitude Venture Partners III, L.P. and its affiliates and Millennium Pharmaceuticals, Inc. own approximately 15.3% and 10.9%, respectively. This concentration of voting power could delay or prevent an acquisition of us on terms that other stockholders may desire.

If equity research analysts do not publish research or reports, or publish unfavorable research or reports, about us, our business or our market, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that equity research analysts publish about us and our business. Equity research analysts may elect not to provide research coverage of our common stock, and such lack of research coverage may adversely affect the market price of our common stock. In the event we do have equity research analyst coverage, we will not have any control over the analysts or the content and opinions included in their reports. The price of our common stock could decline if one or more equity research analysts downgrade our stock or issue other unfavorable commentary or research. If one or more equity research analysts ceases coverage of us or fails to publish reports on us regularly, demand for our common stock could decrease, which in turn could cause our stock price or trading volume to decline.

We have broad discretion in the use of our cash reserves and may not use them effectively.

We have broad discretion over the use of our cash reserves, including the proceeds from our previous financings. You may not agree with our decisions, and our use of these funds may not improve our results of operations or enhance the value of our common stock. Our failure to apply these funds effectively could compromise our ability to pursue our growth strategy, result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline and delay the development of our product candidates. Pending their use, we may invest our cash reserves in a manner that does not produce income or that loses value.

Having availed ourselves of scaled disclosure available to smaller reporting companies, we cannot be certain if such reduced disclosure will make our common stock less attractive to investors.

Under Section 12b-2 of the Exchange Act, a "smaller reporting company" is a company that is not an investment company, an asset backed issuer, or a majority-owned subsidiary of a parent company that is not a smaller reporting company, and has a public float of less than $75 million and annual revenues of less than $50 million during the most recently completed fiscal year. Smaller reporting companies are permitted to provide simplified executive compensation disclosure in their filings; they are exempt from the provisions of Section 404(b) of the Sarbanes-Oxley Act requiring that independent registered public accounting firms provide an attestation report on the effectiveness of internal controls over financial reporting; and they have certain other decreased disclosure obligations in their SEC filings, including, among other things, only being required to provide two years of audited financial statements in annual reports. Being a smaller reporting company, we are permitted to avail ourselves of the scaled disclosure requirements available to smaller reporting companies in this Annual Report on

Form 10-K. Decreased disclosure in our SEC filings as a result of our having availed ourselves of scaled disclosure may make it harder for investors to analyze our results of operations and financial prospects.

Risks Related to Our Financial Condition and Capital Requirements

We have incurred losses since inception, have a limited operating history on which to assess our business, and anticipate that we will continue to incur significant losses for the foreseeable future.

We are a clinical development-stage biopharmaceutical company with a limited operating history. We have incurred net losses in each year since 2009, including net losses attributable to common shareholders of $24.1 million for year ended December 31, 2017. As of December 31, 2017, we had an accumulated deficit of $64.5 million.

As of December 31, 2017, we had cash and cash equivalents of $58.9 million In August 2017, we raised approximately $60 million though private placements of our common stock and warrants to purchase our common stock. We will continue to require substantial additional capital to continue our clinical development and potential commercialization activities. Accordingly, we will need to raise substantial additional capital to continue to fund our operations. The amount and timing of our future funding requirements will depend on many factors, including the pace and results of our clinical development efforts. Failure to raise capital as and when needed, on favorable terms or at all, would have a negative impact on our financial condition and our ability to develop our product candidates.

We have devoted substantially all of our financial resources to identify, acquire, and develop our product candidates, including conducting clinical trials and providing general and administrative support for our operations. To date, we have financed our operations primarily through the sale of equity securities and convertible promissory notes. The amount of our future net losses will depend, in part, on the rate of our future expenditures and our ability to obtain funding through equity or debt financings, strategic collaborations or grants. Biopharmaceutical product development is a highly speculative undertaking and involves a substantial degree of risk. We expect losses to increase as we complete Phase I development and advance into Phase II development of our lead product candidates. We have not yet commenced pivotal clinical trials for any product candidate and it may be several years, if ever, before we complete pivotal clinical trials and have a product candidate approved for commercialization. We expect to invest significant funds into the research and development of our current product candidates to determine the potential to advance these product candidates to regulatory approval.

If we obtain regulatory approval to market one or more products, our future revenue will depend upon the size of any markets in which our product candidates may receive approval, and our ability to achieve sufficient market acceptance, pricing, reimbursement from third-party payors and adequate market share for our product candidates in those markets. Even if we obtain adequate market share for one or more products, because the potential markets in which our product candidates may ultimately receive regulatory approval could be very small, we may never become profitable despite obtaining such market share and acceptance of our products.

We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future and our expenses will increase substantially if and as we:

- continue the clinical development of our product candidates;
- continue efforts to discover new product candidates;
- undertake the manufacturing of our product candidates or increases volumes manufactured by third parties;
- advance our programs into larger, more expensive clinical trials;
- initiate additional preclinical, clinical, or other trials or studies for our product candidates;
- seek regulatory and marketing approvals and reimbursement for our product candidates;
- establish a sales, marketing, and distribution infrastructure to commercialize any products for which we may obtain marketing approval and market for ourselves;

- seek to identify, assess, acquire, and/or develop other product candidates;
- make milestone, royalty or other payments under third-party license agreements;
- seek to maintain, protect, and expand our intellectual property portfolio;
- seek to attract and retain skilled personnel; and
- experience any delays or encounter issues with the development and potential for regulatory approval of our clinical candidates such as safety issues, clinical trial accrual delays, longer follow-up for planned studies, additional major studies or supportive studies necessary to support marketing approval.

Further, the net losses we incur may fluctuate significantly from quarter to quarter and year to year, such that a period-to-period comparison of our results of operations may not be a good indication of our future performance.

Our ability to use our net operating losses to offset future taxable income, if any, may be subject to certain limitations.

In general, under Section 382 of the Code, a corporation that undergoes an "ownership change" (generally defined as a greater than 50-percentage-point cumulative change (by value) in the equity ownership of certain stockholders over a rolling three-year period) is subject to limitations on its ability to utilize its pre-change net operating losses, or NOLs, to offset future taxable income. If we undergo additional ownership changes (some of which changes may be outside our control), our ability to utilize our NOLs could be further limited by Section 382 of the Code. The Merger resulted in an ownership change under Section 382 of the Code for us, and our pre-Merger net operating loss carryforwards and certain other tax attributes will be subject to limitation or elimination. The net operating loss carryforwards and certain other tax attributes of ours may also be subject to limitations as a result of ownership changes. Our NOLs may also be impaired under state law. Accordingly, we may not be able to utilize a material portion of our NOLs. Furthermore, our ability to utilize our NOLs is conditioned upon our attaining profitability and generating U.S. federal taxable income. Other than for 2015, we have incurred net losses since our inception, and we anticipate that we will continue to incur significant losses for the foreseeable future; thus, we do not know whether or when we will generate the U.S. federal taxable income necessary to utilize our NOLs.

We have a material weakness in our internal control over financial reporting. If one or more material weaknesses persist or if we fail to establish and maintain effective internal control over financial reporting, our ability to accurately report our financial results could be adversely affected.

Prior to the Merger, Private Molecular had limited accounting and financial reporting personnel and other resources with which to address its internal control over financial reporting. In connection with the audits of our consolidated financial statements for the years ended December 31, 2015 and 2016 and preparation of interim financial statements for the first quarter of 2017, we and our independent registered public accounting firm identified a material weakness in our internal control over financial reporting. A material weakness is defined as a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis.

Prior to the completion of the Merger, Private Molecular was a private company and had limited accounting and financial reporting personnel and other resources with which to address its internal controls and procedures. Private Molecular's lack of adequate accounting personnel resulted in the identification of a material weakness in its internal control over financial reporting, which has continued through December 31, 2017. Specifically, Private Molecular did not timely and appropriately account for and disclose the impact of complex, non-routine transactions in accordance with GAAP. We have begun our remediation plan, and have hired and intend to hire additional accounting and finance personnel. Additionally, we are in the process of implementation of more robust review, supervision and monitoring of the non-routine transactions and the financial reporting process intended to remediate the identified material weakness. There can be no assurance that these efforts will remediate the material weakness or avoid future weaknesses or deficiencies. Any failure to remediate the material weakness and any future weaknesses or deficiencies or any failure to implement required new or improved controls or difficulties encountered in their implementation could cause us to fail to meet our reporting obligations or result in material misstatements in our financial statements. Following the closing of the Merger, our management has been assessing

the effectiveness of its disclosure controls and procedures and internal control over financial reporting and will be required to provide an annual report on internal control over financial reporting as of December 31, 2018. If we are unable to remediate our material weakness, our management may not be able to conclude that its disclosure controls and procedures or internal control over financial reporting are effective, which could result in investors losing confidence in our reported financial information and may lead to a decline in the stock price. Failure to comply with Section 404 of Sarbanes-Oxley could potentially subject us to sanctions or investigations by the SEC, the Financial Industry Regulatory Authority or other regulatory authorities, as well as increasing the risk of liability arising from litigation based on securities law.

Failure to maintain effective internal controls in accordance with Section 404 of the Sarbanes-Oxley Act of 2002 could have a material adverse effect on our stock price.

Section 404 of the Sarbanes-Oxley Act of 2002 and the related rules and regulations of the SEC require annual management assessments of the effectiveness of our internal control over financial reporting. If we fail to maintain the adequacy of our internal control over financial reporting, as such standards are modified, supplemented or amended from time to time, we may not be able to ensure that we can conclude on an ongoing basis that we have effective internal control over financial reporting in accordance with Section 404 of the Sarbanes-Oxley Act of 2002 and the related rules and regulations of the SEC. If we cannot favorably assess, or if our independent registered public accounting firm is unable to provide an unqualified attestation report on, the effectiveness of our internal control over financial reporting, investor confidence in the reliability of our financial reports may be adversely affected, which could have a material adverse effect on our stock price.

We have never generated any revenue from product sales and may never be profitable.

We have no products approved for commercialization and have never generated any revenue. Our ability to generate revenue and achieve profitability depends on our ability, alone or with strategic collaborators, to successfully complete the development of, and obtain the regulatory and marketing approvals necessary to commercialize one or more of our product candidates. We do not anticipate generating revenue from product sales for the foreseeable future. Our ability to generate future revenue from product sales depends heavily on our success in many areas, including but not limited to:

- completing research and development of one or more of our product candidates;
- obtaining regulatory and marketing approvals for one or more of our product candidates;
- manufacturing one or more product candidates and establishing and maintaining supply and manufacturing relationships with third parties that are commercially feasible;
- marketing, launching and commercializing one or more product candidates for which we obtain regulatory and marketing approval, either directly or with a collaborator or distributor;
- gaining market acceptance of one or more of our product candidates as treatment options;
- meeting our supply needs in sufficient quantities to meet market demand for our product candidates, if approved;
- addressing any competing products;
- protecting, maintaining and enforcing our intellectual property rights, including patents, trade secrets and know-how;
- negotiating favorable terms in any collaboration, licensing or other arrangements into which we may enter;
- obtaining reimbursement or pricing for one or more of our product candidates that supports profitability; and
- attracting, hiring and retaining qualified personnel.

Even if one or more of the product candidates that we develop is approved for commercial sale, we anticipate incurring significant costs associated with launching and commercializing any approved product candidate. We also will have to develop or acquire manufacturing capabilities or continue to contract with contract manufacturers in order to continue development and potential commercialization of our product candidates. For instance, if our costs of manufacturing our drug products are not commercially feasible, then we will need to develop or procure our drug products in a commercially feasible manner to successfully commercialize any future approved product, if any. Additionally, if we are not able to generate revenue from the sale of any approved products, we may never become profitable.

Raising additional capital may cause dilution to our stockholders, restrict our operations or require us to relinquish rights.

To the extent that we raise additional capital through the sale of equity, convertible debt or other securities convertible into equity, the ownership interest of our stockholders will be diluted, and the terms of these new securities may include liquidation or other preferences that adversely affect rights of our stockholders. Debt financing, if available at all, would likely involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, making additional product acquisitions or declaring dividends. For instance, our loan and security agreement with Silicon Valley Bank limits our ability to enter into an asset sale, enter into any change of control, incur additional indebtedness, pay any dividends or enter into specified transactions with our affiliates. If we raise additional funds through strategic collaborations or licensing arrangements with third parties, we may have to relinquish valuable rights to our product candidates or future revenue streams or grant licenses on terms that are not favorable to us. We cannot be assured that we will be able to obtain additional funding if and when necessary to fund our entire portfolio of product candidates to meet our projected plans. If we are unable to obtain funding on a timely basis, we may be required to delay or discontinue one or more of our development programs or the commercialization of any product candidates or be unable to expand our operations or otherwise capitalize on potential business opportunities, which could materially harm our business, financial condition, and results of operations.

We also have historically received funds from state and federal government grants for research and development. The grants have been, and any future government grants and contracts we may receive may be, subject to the risks and contingencies set forth below under the section titled "*—Risks Related to the Development of Our Product Candidates—Reliance on government funding for our programs may add uncertainty to our research and commercialization efforts with respect to those programs that are tied to such funding and may impose requirements that limit our ability to take certain actions, increase the costs of commercialization and production of product candidates developed under those programs and subject us to potential financial penalties, which could materially and adversely affect our business, financial condition and results of operations."* Although we might apply for government contracts and grants in the future, we cannot assure you that we will be successful in obtaining additional grants for any product candidates or programs.

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 is expensive, time consuming and involves significant risk. We cannot guarantee that any clinical trials will be conducted as planned or completed on schedule, if 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 include but are not limited to:

- inability to generate satisfactory preclinical, toxicology or other in vivo or in vitro data or to develop diagnostics capable of supporting the initiation or continuation of clinical trials;
- delays in reaching agreement on acceptable terms with clinical research organizations, or 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 or failure in obtaining required institutional review board, or IRB, approval at each clinical trial site;
- failure to obtain or delays in obtaining a permit from regulatory authorities to conduct a clinical trial;
- delays in recruiting or failure to recruit sufficient eligible patients in our clinical trials;
- failure by clinical sites or CROs or other third parties to adhere to clinical trial requirements;
- failure by our 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 withdrawing from our clinical trials;
- adverse events or other issues of concern significant enough for the FDA, or comparable foreign regulatory authority, to put an IND, on clinical hold;
- occurrence of adverse events associated with our product candidates;
- changes in regulatory requirements and guidance that require amending or submitting new clinical protocols;
- the cost of clinical trials of our product candidates;
- negative or inconclusive results from our clinical trials which may result in us deciding, or regulators requiring us, to conduct additional clinical trials or abandon development programs in other ongoing or planned indications for a product candidate; and
- delays in reaching agreement on acceptable terms with third-party manufacturers and the time for manufacture of sufficient quantities of our product candidates for use in clinical trials.

Any inability to successfully complete clinical development and obtain regulatory approval for one or more of 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 nonclinical studies and/or clinical trials to show that the results obtained from such new formulation are consistent with previous results obtained. Clinical trial delays could also shorten any periods during which our products have patent protection 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 next generation immunotoxin therapies (called ETBs) is unproven and may never lead to marketable products.

The scientific discoveries that form the basis for our efforts to discover and develop our product candidates are relatively recent. To date, neither we nor any other company has received regulatory approval to market therapeutics utilizing ETBs. The scientific evidence to support the feasibility of developing drugs based on these discoveries is both preliminary and limited. Successful development of ETB therapeutic products by us will require solving a number of issues, including identifying appropriate receptor targets, screening for and selecting potent and safe ETB drug candidates, developing a commercially feasible manufacturing process, successfully completing all required preclinical studies and clinical trials, successfully implementing all other requirements that may be mandated by regulatory agencies from clinical development through post-marketing periods, ensuring intellectual property protection in any territory where an ETB may be commercialized and commercializing an ETB successfully in a competitive product landscape. In addition, any product candidates that we develop may not demonstrate in patients the biological and pharmacological properties ascribed to them in laboratory and preclinical testing, and they may interact with human biological systems in unforeseen, ineffective or even harmful ways. If we do not successfully develop and commercialize one or more product candidates based upon this technological approach, we may not become profitable and the value of our capital stock may decline.

Further, our focus on ETB technology for developing product candidates as opposed to multiple, more proven technologies for drug development increases the risk associated with our business. If we are not successful in

developing an approved product using ETB technology, we may not be able to identify and successfully implement an alternative product development strategy. In addition, work by other companies pursuing similar immunotoxin technologies may encounter setbacks and difficulties that regulators and investors may attribute toour product candidates, whether appropriate or not.

We are heavily dependent on the success of our product candidates, the most advanced of which is in the early stages of clinical development. Our ETB therapeutic 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. Some of our product candidates have produced results in preclinical settings to date, or for other indications than those for which we contemplate conducting development and seeking FDA approval, 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. To date, no ETB therapeutics have been approved in the United States or elsewhere worldwide.

We have concentrated our research and development efforts to date on a limited number of product candidates based on our ETB therapeutic platform and identifying our initial targeted disease indications. 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. We currently have one ETB product candidate, MT-3724, in Phase I clinical trials, and the remainder of our product candidates are in preclinical development. MT-3724 has only been administered in patients with non-Hodgkin's lymphoma. This is only one of the multiple indications for which we plan to develop this product candidate. 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. Additionally, our clinical and preclinical data to date is not validated and we have no way of knowing if after validation our clinical trial data will be complete and consistent. There can be no assurance that the data that we develop for our product candidates in our planned indications will be sufficient to obtain regulatory approval.

None of our ETB product candidates have advanced into a pivotal clinical trial for our proposed indications and it may be years before any such clinical trial is 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.

Additionally, the FDA and comparable foreign regulatory authorities have relatively limited experience with ETB therapeutics. No regulatory authority has granted approval to any person or entity, including us, to market or commercialize ETB therapeutics, which may increase the complexity, uncertainty and length of the regulatory approval process for our product candidates. If our ETB product candidates fail to prove to be safe, effective or commercially viable, our product candidate pipeline would have little, if any, value, which would have a material adverse effect on our business, financial condition or results of operations.

The clinical trial and manufacturing requirements of the FDA, the European Medicines Agency, or the EMA, 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 ETB therapeutics can be more expensive and take longer than for other, better known or more extensively studied product candidates. 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 Commission may not be indicative of what the FDA may require for approval, and vice versa, and different or additional preclinical studies and clinical trials may be required to support regulatory approval in each respective jurisdiction. 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 find it difficult to enroll patients in our clinical trials given the limited number of patients who have the diseases for which our product candidates are being studied. Difficulty in enrolling patients could delay or prevent clinical trials of our product candidates.

Identifying and qualifying patients to participate in clinical trials of our ETB product candidates is essential to our success. The timing of our clinical trials depends in part on the rate at which we can recruit patients to participate in clinical trials of our product candidates, and we may experience delays in our clinical trials if we encounter difficulties in enrollment.

The eligibility criteria of our planned clinical trials may further limit the available eligible trial participants as we expect to require that patients have specific characteristics that we can measure or meet the criteria to assure their conditions are appropriate for inclusion in our clinical trials. For instance, our Phase I clinical trial of MT-3724 includes patients with non-Hodgkin's lymphoma. The estimated incidence of non-Hodgkin's lymphoma in the United States is 72,580 new cases and approximately 20,150 deaths were attributable to non-Hodgkin's B-cell lymphomas in 2016. We may not be able to identify, recruit and enroll a sufficient number of patients to complete our clinical trials in a timely manner because of the perceived risks and benefits of the product candidate under study, the availability and efficacy of competing therapies and clinical trials, and the willingness of physicians to participate in our planned clinical trials. If patients are unwilling to participate in our clinical trials for any reason, the timeline for conducting trials and obtaining regulatory approval of our product candidates may be delayed.

If we experience delays in the completion of, or termination of, any clinical trials of our product candidates, the commercial prospects of our product candidates could be harmed, and our ability to generate product revenue from any of these product candidates could be delayed or prevented. In addition, any delays in completing our clinical trials would likely increase our overall costs, impair product candidate development and jeopardize our ability to obtain regulatory approval relative to our current plans. Any of these occurrences may harm our business, financial condition, and prospects significantly.

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 clinical trials or result in a restrictive label or delay regulatory approval.

In addition, our MT-3724 product candidate has been studied in only a limited number of patients with a confirmed diagnosis of non-Hodgkin's lymphoma, and the most common adverse events were peripheral edema, diarrhea, myalgia, cough, fatigue, constipation, nausea, anemia, stomatitis, pyrexia, dizziness, headache, insomnia, dyspnea, neutropenia, thrombocytopenia, blurry vision, dysphagia, oral pain, chills, pneumonia, dehydration, hypoalbuminemia, hyponatremia, dysgeusia, oropharyngeal pain, and maculo-papular rash. We may experience a higher rate or severity of adverse events and comparable or higher rates of discontinuation in testing in our future clinical trials. There is no guarantee that additional or more severe side effects will not be identified through ongoing clinical trials of our product candidates for current and other indications. Undesirable side effects and negative results for any of our product candidates 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 such products;
- regulatory authorities may require additional warnings on the label;

- we may be required to create a 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 its business, results of operations, and prospects.

Our product development program may not discover all possible adverse events that patients who take MT-3724 or our other product candidates may experience. The number of subjects exposed to MT-3724 or our other product candidates and the average exposure time in the clinical development program may be inadequate to detect all 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 subjects and limited duration of exposure, we cannot be fully assured all severe side effects of MT-3724 or our other product candidates will be uncovered. Such severe 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 MT-3724 or another product candidate reaches the market, the FDA, or comparable foreign regulatory authority, may require that we amend the labeling of the product or temporarily cease marketing the product, or may even withdraw approval for the product.

Our ETB therapeutic approach is novel. Negative public opinion and increased regulatory scrutiny of ETB -based therapies may damage public perception of the safety of our product candidates and adversely affect our ability to conduct our business or obtain regulatory approvals for our product candidates.

ETB therapy remains a novel technology, with no ETB therapy product approved to date in the United States or elsewhere worldwide. Public perception may be influenced by claims that ETB therapy is unsafe, and ETB therapy may not gain the acceptance of the public or the medical community. In particular, our success will depend upon physicians who specialize in the treatment of the diseases targeted by our product candidates prescribing treatments that involve the use of one or more of our approved product candidates in lieu of, or in addition to, existing treatments with which they are familiar and for which greater clinical data may be available. More restrictive government regulations or negative public opinion regarding ETB-based therapeutics could have an adverse effect on our business, financial condition or results of operations and may delay or impair the development and commercialization of our product candidates or demand for any products we may develop. SAEs, in ETB clinical trials for our competitors' products, even if not ultimately attributable to the relevant product candidates, and the resulting publicity, could result in increased government regulation, unfavorable public perception, potential regulatory delays in the testing or approval of our product candidates, stricter labeling requirements for those product candidates that are approved and a decrease in demand for any such product candidates.

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.

Clinical testing is expensive and generally takes many years to complete, and the outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. The results of preclinical studies and early clinical trials of our product candidates may not be predictive of the results of larger, later-stage controlled clinical trials. Product candidates that have shown promising results in early-stage clinical trials may still suffer significant setbacks or failure in subsequent clinical trials. Our clinical trial to date has been conducted on a small number of patients in limited numbers of clinical sites for a limited number of indications. We will have to conduct larger, well-controlled trials in our proposed indications to verify the results obtained to date and to support any regulatory submissions for further clinical development. A number of companies in the biopharmaceutical industry have suffered significant setbacks or failure in advanced clinical trials due to lack of efficacy or adverse safety profiles despite promising results in earlier, smaller clinical trials.

Moreover, clinical data are often susceptible to varying interpretations and analyses. We do not know whether any Phase I, Phase II, Phase III or other clinical trials we may conduct will demonstrate consistent or adequate efficacy and safety with respect to the proposed indication for use sufficientto receive regulatory approval or market our drug candidates.

We may use our financial and human resources to pursue a particular research program or product candidate and fail to capitalize on programs or product candidates that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and human resources, it may forego or delay pursuit of opportunities with some programs or product candidates or for other indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or more profitable market opportunities. Our spending on current and future research and development programs and future product candidates for specific indications may not yield any commercially viable products. We may also enter into additional strategic collaboration agreements to develop and commercialize some of our programs and potential product candidates in indications with potentially large commercial markets. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through strategic collaborations, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate, or we may allocate internal resources to a product candidate in a therapeutic area in which it would have been more advantageous to enter into a partnering arrangement.

We may face potential product liability, 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, a material liability claim 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. Some of our ETB therapeutics have shown in clinical trials adverse events, including peripheral edema, diarrhea, myalgia, cough, fatigue, constipation, nausea, anemia, stomatitis, pyrexia, dizziness, headache, insomnia, dyspnea, neutropenia, thrombocytopenia, blurry vision, dysphagia, oral pain, chills, pneumonia, dehydration, hypoalbuminemia, hyponatremia, dysgeusia, oropharyngeal pain, and maculo-papular rash, among others. There is a risk that our future product candidates may induce similar or more severe adverse events. 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 covering our clinical trials in the United States for up to $4.0 million per occurrence up to an aggregate limit of $4.0 million, our insurance may be insufficient to reimburse us for any expenses or losses we may suffer. We also will 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 if we require it, 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 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 breach of warranties. Claims also could 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

A potential breakthrough therapy designation by the FDA for our product candidates 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 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 a clinical trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. 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 or other accelerated 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 this condition, a product sponsor may apply for FDA Fast Track designation. If we seek Fast Track designation for a product candidate, we may not receive it from the FDA. However, even if we receive Fast Track designation, Fast Track designation does not ensure that we will receive marketing approval or that approval will be granted within any particular time frame. 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 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, we will remain subject to ongoing regulatory requirements.

If any of our product candidates are approved, we will be subject to ongoing regulatory requirements 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 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 NDA 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 IV 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;
- 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 our operating results would be adversely affected.

Healthcare legislative reform measures may have a material adverse effect on our business, 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 ACA was passed. The ACA was intended to substantially change the way health care is financed by both governmental and private insurers, and significantly impacts the U.S. pharmaceutical industry. The ACA, among other things, addresses 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. However, the ACA has been under threat of repeal since its passage and in May 2017, the U.S. House of Representatives passed legislation known as the American Health Care Act, or the AHCA, which, if enacted, would amend and repeal significant portions of the ACA. While the AHCA was passed by the U.S. House of Representatives, it is unclear whether and in what form this legislation might be passed by the U.S. Senate and, if so, what form any final legislation might take. In any event, it is not clear what the impact of this legislation or other healthcare reform measures that may be adopted in the future will have on any of our product candidates if they are approved.

In addition, other legislative changes have been proposed and adopted in the United States since the ACA was enacted, and we expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand or lower pricing for our product candidates or additional pricing pressures.

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 will be subject to various federal and state fraud and abuse laws, including, 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;
- 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;

- the federal physician sunshine requirements under the Health Care Reform Laws requires 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 Health Care Reform Law, among other things, amends the intent requirement of the federal Anti-Kickback Statute and criminal healthcare fraud statute. 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.

Reliance on government funding for our programs may add uncertainty to our research and commercialization efforts with respect to those programs that are tied to such funding and may impose requirements that limit our ability to take certain actions, increase the costs of commercialization and production of product candidates developed under those programs and subject us to potential financial penalties, which could materially and adversely affect our business, financial condition and results of operations.

During the course of our development of our lead product candidate, we have been funded in significant part through state grants, including but not limited to the substantial funding we have received from the Cancer Prevention & Research Institute of Texas, or CPRIT. In addition to the funding we have received to date, we have applied and intend to continue to apply for federal and state grants to receive additional funding in the future. We have been awarded a second CPRIT grant for our MT-4019 program where contract negotiations and amendments are still ongoing and may or may not be successful. Contracts and grants funded by the U.S. government, state governments and their related agencies, including our contracts with the State of Texas pertaining to funds we have already received, include provisions that reflect the government's substantial rights and remedies, many of which are not typically found in commercial contracts, including powers of the government to:

- require repayment of all or a portion of the grant proceeds, in certain cases with interest, in the event we violate certain covenants pertaining to various matters that include any potential relocation outside of the State of Texas, failure to achieve certain milestones or to comply with terms relating to use of grant proceeds, or failure to comply with certain laws;
- terminate agreements, in whole or in part, for any reason or no reason;
- reduce or modify the government's obligations under such agreements without the consent of the other party;

- claim rights, including certain intellectual property rights, in products and data developed under such agreements;
- audit contract-related costs and fees, including allocated indirect costs;
- suspend the contractor or grantee from receiving new contracts pending resolution of alleged violations of procurement laws or regulations;
- impose State of Texas or U.S. manufacturing requirements for products that embody inventions conceived or first reduced to practice under such agreements;
- impose qualifications for the engagement of manufacturers, suppliers and other contractors as well as other criteria for reimbursements;
- suspend or debar the contractor or grantee from doing future business with the government;
- control and potentially prohibit the export of products;
- pursue criminal or civil remedies under the False Claims Act, False Statements Act and similar remedy provisions specific to government agreements; and
- limit the government's financial liability to amounts appropriated by the State of Texas on a fiscal-year basis, thereby leaving some uncertainty about the future availability of funding for a program even after it has been funded for an initial period.
- In addition to those powers set forth above, the government funding we may receive could also impose requirements to make payments based upon sales of our products in the future. For example, under the terms of our award from CPRIT, we are required to pay CPRIT a portion of its revenues from sales of products directly funded by CPRIT, or received from our licensees or sublicensees, at a percentage in the mid-single digits until the aggregate amount of such payments equals a specified multiple of the grant amount, and thereafter at a rate of less than or equal to three percent, subject to our right, under certain circumstances, to make a one-time payment in a specified amount to CPRIT to buy out such payment obligations.

We may not have the right to prohibit the State of Texas or, if relevant under possible future federal grants, the U.S. government, from using certain technologies developed by us, and we may not be able to prohibit third-party companies, including our competitors, from using those technologies in providing products and services to the U.S. government. The U.S. government generally takes the position that it has the right to royalty-free use of technologies that are developed under U.S. government contracts. These and other provisions of government grants may also apply to intellectual property we license now or in the future.

In addition, government contracts and grants normally contain additional requirements that may increase our costs of doing business, reduce our profits and expose us to liability for failure to comply with these terms and conditions. These requirements include, for example:

- specialized accounting systems unique to government contracts and grants;
- mandatory financial audits and potential liability for price adjustments or recoupment of government funds after such funds have been spent;
- public disclosures of certain contract and grant information, which may enable competitors to gain insights into our research program; and
- mandatory socioeconomic compliance requirements, including labor standards, non-discrimination and affirmative action programs and environmental compliance requirements.

If we fail to maintain compliance with any such requirements that may apply to us now or in the future, we may be subject to potential liability and to termination of our contracts.

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 commercialization efforts, research and development efforts and business operations; 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. We do not currently carry biological or hazardous waste insurance coverage.

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, that 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. We urge our stockholders 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 Our Intellectual Property

Our ability to compete may decline if we are unable to establish intellectual property rights or if our intellectual property rights are inadequate to protect our ETB technology, present and future product candidates and related processes for our developmental pipeline.

We rely or will rely upon a combination of patents, trade secret protection, and confidentiality agreements to protect our intellectual property related to our technologies and product candidates. Our commercial success and viability depends in large part on our and any potential future licensors' ability to obtain, maintain and enforce patent and other intellectual property protections in the United States, Europe and other countries worldwide with respect to our current and future proprietary technologies and product candidates. If we or our future collaboration partners do not adequately protect such intellectual property, competitors may be able to use our technologies and erode or negate any competitive advantage we may have, which could materially harm our business, negatively affect our position in the marketplace, limit our ability to commercialize product candidates and delay or render impossible our achievement of profitability.

Our strategy and future prospects are based, in particular, on our patent portfolio. We and our future collaboration partners or licensees will best be able to protect our proprietary ETB technologies, product candidates and their uses from unauthorized use by third parties to the extent that valid and enforceable patents, other regulatory exclusivities or effectively protected trade secrets, cover them. We have sought to protect our proprietary position by filing patent applications in the United States and elsewhere worldwide related to our proprietary ETB

technologies, product candidates and methods of use 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 meaningful patent protection.

Intellectual property rights have limitations and do not necessarily address all potential threats to our competitive advantage. Our ability to obtain patent protection for our proprietary technologies, product candidates and their uses is uncertain and the degree of future protection afforded by our intellectual property rights is uncertain due to a number of factors, including, but not limited to:

- we or our current or future collaboration partners may not have been the first to make the inventions covered by pending patent applications or issued patents;
- we or our current or future collaboration partners may not have been the first to file patent applications covering our ETB technology, product candidates, compositions or their uses;
- others may independently develop identical, similar or alternative methods, products, product candidates or compositions and uses thereof;
- we or our current or future collaboration partners' disclosures in patent applications may not be sufficient to meet the statutory requirements for patentability;
- any or all of our or our current or future collaboration partners' pending patent applications may not result in issued patents;
- we or our current or future collaboration partners may not seek or obtain patent protection in countries that may eventually provide us with a significant business opportunity;
- any patents issued to us or our current or future collaboration partners may not provide a basis for commercially viable products, may not provide any competitive advantages or may be successfully challenged by third parties;
- we or our current or future collaboration partners' products, product candidates, compositions, methods or uses thereof may not be patentable;
- others may design around our or our current or future collaboration partners' patent claims to produce competitive products or uses which fall outside of the scope of our patents or other intellectual property rights;
- others may identify prior art or other bases which could invalidate our or our current or future collaboration partners' patents;
- our competitors might conduct research and development activities in the United States and other countries that provide a safe harbor from patent infringement claims for certain research and development activities, as well as in countries where we or our current or future collaboration partners do not have patent rights, and then use the information learned from such activities to develop competitive products for sale in major commercial markets; or
- we or our current or future collaboration partners may not develop additional proprietary technologies or products that are patentable.

Further, 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 or their uses 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 or their uses, 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 ETB technology, product candidates and associated assays and uses. 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 or challenge 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.

If we cannot obtain and maintain effective protection of exclusivity from our regulatory efforts and intellectual property rights, including patent protection or data or market exclusivity for our product candidates or their uses, we may not be able to compete effectively and our business and results of operations would be harmed.

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

Filing, prosecuting and defending patents on product candidates in all countries throughout the world would be prohibitively expensive. 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. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop our own products and may also export infringing products to territories where we have patent protection, but enforcement is not as strong as that 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 healthcare, medicine, or biotechnology products, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights generally. Proceedings to enforce our patent 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, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims 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.

We may not have sufficient patent terms and regulatory exclusivity protections for our product candidates to effectively protect our competitive position.

Patents have a limited term. In the United States and most jurisdictions worldwide, the statutory expiration of a non-provisional patent is generally 20 years after it is first filed. Although various extensions may be available, the life of a patent, and the protection it affords, is limited. Even if patents covering our technologies, product candidates and associated uses are obtained, once the patent life has expired for a product candidate, we may be open to competition from generic, biosimilar or biobetter medications.

Patent term extensions under the Hatch-Waxman Act in the United States, and regulatory extensions in Japan and certain other countries, and under Supplementary Protection Certificates in Europe, may be available to extend the patent or market or data exclusivity terms of our product candidates depending on the timing and duration of the regulatory review process relative to patent term. In addition, upon issuance in the United States, any patent term may be adjusted based on specified delays during patent prosecution caused by the applicant(s) or the USPTO. We will likely rely on 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 involve 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.

For our U.S. patent applications containing a claim not entitled to priority before March 16, 2013, there is a greater level of uncertainty in the patent law. On September 16, 2011, the Leahy-Smith America Invents Act, or the Leahy-Smith Act, was signed into law. The Leahy-Smith Act includes a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications are prosecuted and may also affect patent litigation. The USPTO has promulgated regulations and developed procedures to govern administration of the Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act, and in particular, the first inventor to file provisions, did not come into effect until March 16, 2013. The Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition or results of operations.

An important change introduced by the Leahy-Smith Act is that, as of March 16, 2013, the United States transitioned to a "first-inventor-to-file" system for deciding which party should be granted a patent when two or more patent applications are filed by different parties claiming the same invention. A third party that filed or files a patent application in the USPTO after March 16, 2013 but before we file an application could therefore be awarded a patent covering an invention of ours even if we had made the invention before it was made by the third party. This will require us to be cognizant going forward of the time from invention to filing of a patent application. Furthermore, our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our technology and the prior art allow our technology to be patentable over the prior art. Since patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we were the first to either (i) file any patent application related to our product candidates or (ii) invent any of the inventions claimed in our patents or patent applications.

Among some of the other changes introduced by the Leahy-Smith Act are changes that limit where a patentee may file a patent infringement suit and new procedures providing opportunities for third parties to challenge any issued patent in the USPTO. Included in these new procedures is a process known as inter partes review, or IPR, which has been generally used by many third parties to invalidate patents. The IPR process is not limited to patents filed after the Leahy-Smith Act was enacted, and would therefore be available to a third party seeking to invalidate any of our U.S. patents, even those issued or filed before March 16, 2013. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in U.S. federal court necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action.

Issued patents covering our ETB technologies, product candidates and uses could be found invalid or unenforceable if challenged in court.

Even if our or our current or future collaboration partners' patents do successfully issue and even if such patents cover our product candidates and methods of use, third parties may initiate interference, re-examination, post-grant review, IPR or derivation actions in the U.S. Patent and Trademark Office, or USPTO; may initiate third party oppositions in the European Patent Office, or EPO; or may initiate similar actions challenging the validity, enforceability or scope of such patents in other patent administrative proceedings worldwide, which may result in patent claims being narrowed or invalidated. Such proceedings could result in revocation or amendment of our patents in such a way that they no longer cover competitive technologies, product candidates or methods of use. Further, if we initiate legal proceedings against a third party to enforce a patent covering our technologies, product candidates or uses, the defendant could counterclaim that our relevant patent is invalid or unenforceable. In patent litigation in the United States, certain European and other countries worldwide, it is commonplace for defendants to make counterclaims alleging invalidity and unenforceability in the same proceeding, or to commence parallel defensive proceedings such as patent nullity actions to challenge validity and enforceability of asserted patent claims. Further, in the United States, a third party, including a licensee of one of our or our current or future collaboration partners' patents, may initiate legal proceedings against us in which the third party challenges the validity, enforceability, or scope of our patent(s).

In administrative and court actions, grounds for a patent validity challenge may include alleged failures to meet any of several statutory requirements, including lack of novelty, nonobviousness (or inventive step) and, in some cases clarity, adequate written description or non-enablement of, the claimed invention. Grounds for unenforceability assertions include allegations that someone connected with prosecution of the patent withheld relevant information from the Examiner during prosecution in the USPTO, or made a misleading statement during prosecution in the USPTO, the EPO or elsewhere. Third parties also may raise similar claims before administrative bodies in the USPTO or the EPO, even outside the context of litigation. The outcome following legal assertions of invalidity and unenforceability are unpredictable. With respect to patent claim validity, for example, we cannot be certain that there is no invalidating prior art, of which we or the patent examiner was unaware during prosecution. Further, we cannot be certain that all of the potentially relevant art relating to our patents and patent applications has been brought to the attention of every patent office. If a defendant or other patent challenger were to prevail on a legal assertion of invalidity or unenforceability, we could lose at least in part, and perhaps all, of the patent protection on our ETB technology, product candidates and associated uses.

We may become involved in lawsuits to protect or enforce our patents or other intellectual property rights, which could be expensive, time consuming and unsuccessful and have a material adverse effect on the success of our business.

Competitors may infringe our patents or the patents of any of our future licensors. 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. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, nonobviousness, adequate 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. The outcome following legal assertions of invalidity and unenforceability is unpredictable.

There is also a risk that, even if the validity of such patents is upheld, the court will construe the patent's claims narrowly or decide that we do not have the right to stop the other party from using the claimed invention at issue on the grounds that our or our current or future collaboration partners' patent claims do not cover the claimed invention. Third parties may in the future make claims challenging the inventorship or ownership of our intellectual property. An adverse outcome in a litigation or proceeding involving one or more of our patents could limit our ability to assert those patents against those parties or other competitors, and may curtail or preclude our ability to exclude third parties from making and selling similar or competitive products. Similarly, if we assert trademark infringement claims, a court may determine that the marks we have asserted are invalid or unenforceable, or that the party against whom we have asserted trademark infringement has superior rights to the marks in question. In this case, we could ultimately be forced to cease use of such trademarks.

Even if we were to establish infringement of our patent rights by a third party, the court may decide not to grant an injunction against further infringing activity and instead award only monetary damages, which may or may not be an adequate remedy. 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 litigation. There could also be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could adversely affect the market price of our common stock. Moreover, there can be no assurance that we will have sufficient financial or other resources to file and pursue such infringement claims, which typically last for years before they are concluded and can involve substantial expenses. Even if we ultimately prevail in such claims, the monetary cost of such litigation and the diversion of the attention of our management and scientific personnel could outweigh any benefit we receive as a result of the proceedings.

Interference or derivation proceedings provoked by third parties or brought by us or declared by the USPTO may be necessary to determine the priority or inventorship of inventions with respect to our patents or patent applications or those of any of our future licensors. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights to it 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, interference proceedings, or derivation proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees. In addition, the uncertainties associated with litigation and administrative proceedings could have a material adverse effect on our ability to raise the funds necessary to continue 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.

If we are unable to protect the confidentiality of our trade secrets and know-how 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, processes for which patents are difficult to enforce and any other elements of our product candidate discovery and development processes that involve proprietary know-how, information or technology that is not covered by patents. However, trade secrets can be difficult to protect. We seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements with our employees, consultants, scientific advisors and contractors. We also seek to preserve the integrity and confidentiality of our data and trade secrets by maintaining physical security of our premises and physical and electronic security of 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, our trade secrets may otherwise become known or be independently discovered by competitors.

Although our current employment contracts provide for and we expect all of our employees and consultants to assign their inventions to us, and all of our employees, consultants, advisors, and any third parties who have access to our proprietary know-how, information or technology are expected 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 trade secrets.

Third-party claims of intellectual property infringement could result in costly litigation or other proceedings and 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. We are currently not aware of U.S. or foreign patents or pending patent applications owned by third parties that cover our ETBs or therapeutic uses of ETBs. In the future, we may identify such third-party U.S. and non-U.S. issued patents and

pending applications. If we identify any such patents or pending 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 or a requisite manufacturing process, we may not be free to manufacture or marketour product candidates, including MT-3724, as planned, absent such a license, which may not be available tous 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 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 patent applications 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 involving patent and other intellectual property rights in the biotechnology and pharmaceutical industries, including patent infringement lawsuits, interferences, oppositions and reexamination proceedings before the USPTO and corresponding foreign patent offices. Third parties own numerous U.S. and foreign issued patents and pending patent applications 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 patent infringement 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, may involve substantial litigation expense and may require a substantial diversion of employee resources from our business. In the event of a successful claim of patent 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 may be unsuccessful in obtaining or maintaining third-party rights necessary to develop our ETB technologies or to commercialize our product candidates and associated methods of use through acquisitions and in-licenses.

Presently, we have rights to intellectual property under patent applications that we own. Because our programs may involve a range of ETB targets and antibody domains, which in the future may include targets and antibody domains that require the use of proprietary rights held by third parties, the growth of our business may likely depend in part on our ability to acquire, in-license or use these proprietary rights. In addition, our product candidates may require specific formulations or manufacturing technologies to work effectively and be manufactured efficiently, and these rights may be held by others. We may be unable to acquire or in-license any 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 more established companies are also pursuing strategies to license or acquire third-party intellectual property rights that we may consider attractive. These established companies may 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 federal, state or international academic institutions to accelerate our preclinical research or development under written agreements with these institutions. Typically, these institutions grant the rights to the collaborator and retain a non-commercial license to all rights as

well as march-in rights in the situation that the collaborator fails to exercise or commercialize certain covered technologies Regardless of such initial rights, we may be unable to exercise or commercialize certain funded technologies thereby triggering march-in rights of the funding institution 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 it. 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.

If we are unable to successfully obtain and maintain rights to required third-party intellectual property, we may have to abandon development of that product candidate or pay additional amounts to the third-party, and our business and financial condition could suffer.

The patent protection and patent prosecution for some of our product candidates may in the future be dependent on third parties.

While we normally have or seek and gain the right to fully prosecute the patent applications relating to our product candidates, there may be times when certain patents or patent applications relating to our product candidates, their uses or their manufacture may be controlled by our future licensors. If any of our future licensors fail to appropriately and broadly prosecute patent applications and maintain patent protection of claims covering any of our product candidates, their uses or their manufacture, 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 patent applications or the maintenance of patents we have licensed from third parties in the future, 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 and will continue to be a party to a number of intellectual property license collaboration and supply agreements that may be important to our business and expect to enter into additional license agreements in the future. Our existing agreements impose, and we expect that future agreements will impose, various diligence, milestone payment, royalty, purchasing and other obligations on us. If we fail to comply with our obligations under these agreements, or we are subject to a bankruptcy, our agreements may be subject to termination by the licensor or other contract partner, in which event we would not be able to develop, manufacture or market products covered by the license or subject to supply commitments.

We may be subject to claims that our employees, consultants or independent contractors 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 employ individuals who were previously employed at universities or other biotechnology or pharmaceutical companies, including potential competitors. Although we have written agreements and make every effort to ensure that our employees, consultants and independent contractors 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 or independent contractors have wrongfully used or disclosed confidential information of 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.

Risks Related to Our Reliance on Third Parties

We rely on third parties to conduct our clinical trials, manufacture our product candidates and perform other services. If these third parties do not successfully perform and comply with regulatory requirements, we may not be able to successfully complete clinical development, obtain regulatory approval or commercialize our product candidates, and our business could be substantially harmed.

We have relied upon and plan to continue to rely upon third-party CROs to conduct, monitor and manage our ongoing clinical programs. We rely on these parties for execution of clinical trials and we manage and control only some aspects of their activities. We remain responsible for ensuring that each of our trials is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on the CROs does not relieve us of our regulatory responsibilities. We and our CROs and other vendors are required to comply with all applicable laws, regulations and guidelines, including those required by the FDA and comparable foreign regulatory authorities for all of our product candidates in clinical development. If we or any of our CROs or vendors fail to comply with applicable laws, regulations and guidelines, the results generated in our clinical trials may be deemed unreliable, and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot be assured that our CROs and other vendors will meet these requirements, or that upon inspection by any regulatory authority, such regulatory authority will determine that efforts, including any of our clinical trials, comply with applicable requirements. Our failure to comply with these laws, regulations and guidelines may require us to repeat clinical trials, which would be costly and delay the regulatory approval process.

If any of our relationships with these third-party CROs terminates, we may not be able to enter into arrangements with alternative CROs in a timely manner or do so on commercially reasonable terms. In addition, our CROs may not prioritize our clinical trials relative to those of other customers, and any turnover in personnel or delays in the allocation of CRO employees by the CRO may negatively affect our clinical trials. If CROs do not successfully carry out their contractual duties or obligations or meet expected deadlines, our clinical trials may be delayed or terminated and we may not be able to meet our current plans with respect to our product candidates. CROs also may involve higher costs than anticipated, which could negatively affect our financial condition and operations.

We currently do not have the capability to manufacture product candidates for use in the conduct of our clinical trials, and we currently lack the resources and the capability to manufacture any of our product candidates on a clinical or commercial scale without the use of third-party manufacturers. Until the completion of our cGMP manufacturing facility, we plan to rely in part on third-party manufacturers, and their responsibilities will include purchasing from third-party suppliers the materials necessary to produce our product candidates for our clinical trials and regulatory approval. We expect there to be a limited number of suppliers for some of the raw materials that we expect to use to manufacture our product candidates, and we may not be able to identify alternative suppliers to prevent a possible disruption of the manufacture of our product candidates for our clinical trials, and, if approved, ultimately for commercial sale. Even after the completion of our cGMP manufacturing facility, we may not be able to manufacture product candidates or there may be substantial technical or logistical challenges to supporting manufacturing demand for products candidates. We may also fail to comply with cGMP requirements and standards which would not enable us to utilize the manufacturing facility to make clinical trial supply.

Although we generally do not expect to begin a clinical trial unless we believe we have a sufficient supply of a product candidate to complete the trial, any significant delay or discontinuity in the supply of a product candidate, or the raw materials or other material components in the manufacture of the product candidate, could delay completion of our clinical trials and potential timing for regulatory approval of our product candidates, which would harm our business and results of operations. We do not yet have sufficient information to reliably estimate the cost of the commercial manufacturing of our product candidates and our current costs to manufacture our drug products may not be commercially feasible, and the actual cost to manufacture our product candidates could materially and adversely affect the commercial viability of our product candidates. As a result, we may never be able to develop a commercially viable product.

In addition, our reliance on third-party manufacturers exposes us to the following additional risks:

- we may be unable to identify manufacturers on acceptable terms or at all;
- our third-party manufacturers might be unable to timely formulate and manufacture our product or produce the quantity and quality required to meet our clinical and commercial needs, if any;
- contract manufacturers may not be able to execute our manufacturing procedures appropriately;
- our future third-party manufacturers may not perform as agreed or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store and distribute our products;
- manufacturers are subject to ongoing periodic unannounced inspection by the FDA and corresponding state agencies to ensure strict compliance with cGMPs and other government regulations and corresponding foreign standards, and we do not have control over third-party manufacturers' compliance with these regulations and standards;
- we may not own, or may have to share, the intellectual property rights to any improvements made by our third-party manufacturers in the manufacturing process for our product candidates; and
- our third-party manufacturers could breach or terminate their agreement with us.

Each of these risks could delay our clinical trials, the approval, if any, of our product candidates by the FDA or equivalent regulatory agencies outside the U.S., or the commercialization of our product candidates or result in higher costs or deprive us of potential product revenue. In addition, we rely on third parties to perform release testing on our product candidates prior to delivery to patients. If these tests are not appropriately conducted and test data are not reliable, patients could be put at risk of serious harm, which could result in product liability suits.

The manufacture of medical products is complex and requires significant expertise and capital investment, including the development of advanced manufacturing techniques and process controls. Manufacturers of medical products often encounter difficulties in production, particularly in scaling up and validating initial production and absence of contamination. These problems include difficulties with production costs and yields, quality control, including stability of the product, quality assurance testing, operator error, shortages of qualified personnel, as well as compliance with strictly enforced federal, state and foreign regulations. Furthermore, if contaminants are discovered in our supply of our product candidates or in the manufacturing facilities, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. We cannot be assured that any stability or other issues relating to the manufacture of our product candidates will not occur in the future. Additionally, our manufacturers may experience manufacturing difficulties due to resource constraints or as a result of labor disputes or unstable political environments. If our manufacturers were to encounter any of these difficulties, or otherwise fail to comply with their contractual obligations, our ability to provide our product candidates to patients in clinical trials would be jeopardized. Any delay or interruption in the supply of clinical trial supplies could delay the completion of clinical trials, increase the costs associated with maintaining clinical trial programs and, depending upon the period of delay, require us to commence new clinical trials at additional expense or terminate clinical trials completely.

We may be unable to realize the potential benefits of any collaboration.

We have multi-target research and development collaborations ongoing with Millennium Pharmaceuticals, Inc. (a wholly owned subsidiary of Takeda Pharmaceutical Company Ltd) and seek to collaborate with other partners in the future. Even if we are successful in entering into one or more additional collaborations with respect to the development and/or commercialization of one or more product candidates, there is no guarantee that any of these collaborations will be successful. Collaborations may pose a number of risks, including:

- collaborators often have significant discretion in determining the efforts and resources that they will apply to the collaboration, and may not commit sufficient resources to the development, marketing or commercialization of the product or products that are subject to the collaboration;
- collaborators may not perform their obligations as expected;

- any such collaboration may significantly limit our share of potential future profits from the associated program, and may require us to relinquish potentially valuable rights to our current product candidates, potential products or proprietary technologies or grant licenses on terms that are not favorable tous;
- collaborators may cease to devote resources to the development or commercialization of our product candidates if the collaborators view our product candidates as competitive with their own products or product candidates;
- disagreements with collaborators, including disagreements over proprietary rights, contract interpretation or the course of development, might cause delays or termination of the development or commercialization of product candidates, and might result in legal proceedings, which would be time consuming, distracting and expensive;
- collaborators may be impacted by changes in their strategic focus or available funding, or business combinations involving them, which could cause them to divert resources away from the collaboration;
- collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability;
- the collaborations may not result in us achieving revenues sufficient to justify such transactions; and
- collaborations may be terminated and, if terminated, may result in a need for us to raise additional capital to pursue further development or commercialization of the applicable product candidate.

As a result, a collaboration may not result in the successful development or commercialization of our product candidates.

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 have and expect to continue periodically to 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 our product candidates, processes or services made, used, or performed pursuant to the agreements, 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 or use of the product candidate, as well as for alleged infringements of any patent or other intellectual property right owned by a third party. With respect to consultants, we often indemnify them from claims arising from the good faith performance of their services.

If our obligations under an indemnification provision exceed applicable insurance coverage or if we were 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.

Risks Related to Commercialization of Our Product Candidates

We currently have limited marketing and sales experience. If we are unable to establish sales and marketing capabilities or enter into agreements with third parties to market and sell our product candidates, we may be unable to generate any revenue.

Although some of our employees may have marketed, launched and sold other pharmaceutical products in the past while employed at other companies, we have no experience selling and marketing our product candidates, and we currently have no marketing or sales organization. To successfully commercialize any products that may result from our development programs, we will need to find one or more collaborators to commercialize our products or invest in and develop these capabilities, either on our own or with others, which would be expensive, difficult and

time consuming. Any failure or delay in the timely development ofour internal commercialization capabilities could adversely impact the potential for success ofour products.

If commercialization collaborators do not commit sufficient resources to commercialize our future products and we are unable to develop the necessary marketing and sales capabilities on our own, we will be unable to generate sufficient product revenue to sustain or grow our business. We may be competing with companies that currently have extensive and well-funded marketing and sales operations, particularly in the markets our product candidates are intended to address. Without appropriate capabilities, whether directly or through third-party collaborators, we may be unable to compete successfully against these more established companies.

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 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 it, 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.

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.

Our estimates for the addressable patient population and our estimates for the prices we can charge for our product candidates may differ significantly from the actual market addressable by our product candidates. For instance, our Phase I clinical trial of MT-3724 is focused on non-Hodgkin's lymphoma. The estimated incidence of non-Hodgkin's B-cell lymphoma is 72,240 new cases and approximately 20,140 deaths were attributable to the disease in the United States in 2017, only a subset of which may benefit from treatment with MT-3724. Our projections of both the number of people who have these 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 the 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. Additionally, while we believe that the data in our Phase I clinical trials for MT-3724 are supportive of application to other indications, there can be no assurance that our clinical trials will successfully address any additional indications. Likewise, 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 drug 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 MT-3724 and the other product candidates that we may seek to develop or commercialize in the future. We are aware that the following companies have therapeutics marketed or in development that could compete with ETBs: Roche, Genentech, Bayer, Takeda, AbbVie, Celgene, Seattle Genetics, Immunogen, Morphosys, Genmab, Bristol Myers Squibb, Novartis, Regeneron, Janssen, Xencor, Amgen, Macrogenics, Astra Zeneca, Lilly, Merck KGaA, Pfizer, Merus, Sanofi, Mentrik Biotech, Merrimack Pharmaceuticals, Spectrum Pharmaceuticals, Unum Therapeutics, Daiichi Sankyo, Karyopharm,and F-Star. Our competitors may succeed in developing, acquiring or licensing technologies and drug products that are more effective or less costly than MT-3724 or any other product candidates that we are currently developing or that we may develop, which could render our product candidates obsolete and noncompetitive.

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, including biologics. 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.

If our competitors obtain marketing approval from the FDA or comparable foreign regulatory authorities for their product candidates more rapidly than we do, it could result in our competitors establishing a strong market position before we are able to enter the market. Third-party payors, including governmental and private insurers, also may encourage the use of generic products. For example, if MT-3724 is ultimately approved, it may be priced at a significant premium over other competitive products. This may make it difficult for MT-3724 or any other future products to compete with these products. Failure of MT-3724 or other 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 the 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 prevalence and severity of the disease and any side effects;
- 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 these therapies;
- the perceived ratio of risk and benefit of these therapies by physicians 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 our 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 continued 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 our program so that such a product may become unreasonable to continue to develop;
- 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 a program or programs, 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 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 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, and prescription drugs in particular, 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

Our future success depends in part on our ability to retain our Chief Executive Officer and Chief Scientific Officer and to attract, retain, and motivate other qualified personnel.

We are highly dependent on Eric E. Poma, Ph.D., our Chief Executive Officer and Chief Scientific Officer, the loss of whose services may adversely impact the achievement of our objectives. Dr. Poma could leave our employment at any time, as he is an “at will” employee. Recruiting and retaining other qualified employees, consultants and advisors for our business, including scientific and technical personnel, will also be crucial to our success. There is currently a shortage of highly qualified personnel in our industry, which is likely to continue. Additionally, this shortage of highly qualified personnel is particularly acute in the area where we are located. As a result, competition for personnel is intense and the turnover rate can be high. We may not be able to attract and retain personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for individuals with similar skill sets. In addition, failure to succeed in development and commercialization of our product candidates may make it more challenging to recruit and retain qualified personnel. The inability to recruit and retain qualified personnel, or the loss of the services of Dr. Poma may impede the progress of our research, development and commercialization objectives and would negatively impact our ability to succeed in our product development strategy.

We will need to expand our organization, and we may experience difficulties in managing this growth, which could disrupt our operations.

As of December 31, 2017, we had 38 full-time employees. As our development and commercialization plans and strategies develop, we expect to need additional managerial, operational, sales, marketing, financial, legal and other resources. Our management may need to divert a disproportionate amount of its attention away from its day-to-day activities and devote a substantial amount of time to managing these growth activities. We may not be able

to effectively manage the expansion of our operations, which may result in weaknesses in our infrastructure, operational mistakes, loss of business opportunities, loss of employees and reduced productivity among remaining employees. Our expected growth could require significant capital expenditures and may divert financial resources from other projects, such as the development of additional product candidates. If our management is unable to effectively manage our growth, our expenses may increase more than expected, our ability to generate and/or grow revenue could be reduced and we may not be able to implement our business strategy. Our future financial performance and our ability to commercialize product candidates and compete effectively will depend, in part, on our ability to effectively manage any future growth.

Failure in our information technology and storage systems could significantly disrupt the operation of our business.

Our ability to execute our business plan and maintain operations depends on the continued and uninterrupted performance of our information technology, or IT, systems. IT systems are vulnerable to risks and damages from a variety of sources, including telecommunications or network failures, malicious human acts and natural disasters. Moreover, despite network security and back-up measures, some of our and our vendors' servers are potentially vulnerable to physical or electronic break-ins, including cyber-attacks, computer viruses and similar disruptive problems. These events could lead to the unauthorized access, disclosure and use of non-public information. The techniques used by criminal elements to attack computer systems are sophisticated, change frequently and may originate from less regulated and remote areas of the world. As a result, we may not be able to address these techniques proactively or implement adequate preventative measures. If our computer systems are compromised, we could be subject to fines, damages, reputational harm, litigation and enforcement actions, and we could lose trade secrets, the occurrence of which could harm our business. For example, the loss of data from completed clinical trials for our product candidates could result in delays in our regulatory approval efforts and significantly increase our costs. Despite precautionary measures to prevent unanticipated problems that could affect our IT systems, sustained or repeated system failures that interrupt our ability to generate and maintain data could adversely affect our ability to operate our business.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

In October 2016, we entered into a facility lease agreement for 18,000 square feet of office and laboratory space in Austin, Texas, which serves as out corporate headquarters. The lease was initially set to expire in May 2022. In January 2017, Molecular entered into an amendment of the lease to add an additional 4,000 square feet, consisting mostly of laboratory space. In March 2017, Molecular entered into a second amendment to the Austin, TX lease for an additional 11,000 square feet of office and laboratory space and an extension of the lease term through May 2023. The term of Molecular's lease for the Austin, TX is space expires August 2023. The lease has an option to renew for one additional five-year period at our discretion.

We also lease two office spaces occupying approximately 12,000 square feet in the aggregate in Jersey City, New Jersey under a leases expiring in September 2019, and December 2021, respectively.

We believe substantially all of our property and equipment is in good condition and that Molecular has sufficient capacity to meet its current operational needs.

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

Shares of Threshold Pharmaceuticals, Inc. common stock were historically listed on the Nasdaq Capital Market under the symbol "THLD." After completion of the Merger on August 1, 2017, Threshold Pharmaceuticals, Inc was renamed "Molecular Templates, Inc." and commenced trading on the Nasdaq Capital Market under the symbol "MTEM." The following table sets forth for the periods indicated the high and low sales price per share of our common stock as reported by Nasdaq for the quarterly periods indicated. This table has been adjusted to reflect the 11-for-1 reverse stock split of our common stock in connection with, and prior to the completion of the Merger:

	High	Low
Year Ended December 31, 2017:		
First Quarter	$ 11.77	$ 4.84
Second Quarter	$ 6.27	$ 3.85
Third Quarter	$ 7.59	$ 4.18
Fourth Quarter	$ 11.88	$ 6.62
Year Ended December 31, 2016:		
First Quarter	$ 6.82	$ 2.31
Second Quarter	$ 8.46	$ 3.30
Third Quarter	$ 16.28	$ 5.08
Fourth Quarter	$ 7.48	$ 3.85

There were approximately 71 holders of record of our common stock as of March 21, 2018. On March 21, 2018, the last reported sales price per share of our common stock was $9.08 per share.

Dividends

We have never declared or paid any dividends on our capital stock. We currently intend to retain any future earnings to fund the development and expansion of our business, and therefore we do not anticipate paying cash dividends on our common stock in the foreseeable future. Any future determination to pay dividends will be at the discretion of our board of directors and will depend on our financial condition, results of operations, capital requirements, restrictions contained in future financing instruments and other factors our board of directors deems relevant.

Unregistered Sales of Equity Securities

On December 1, 2017, we amended an engagement letter entered into between the Company and Wedbush Securities Inc., or Wedbush. In connection with entering into the amendment, on December 1, 2017, pursuant to an exemption from registration under Section 4(a)(2) of the Securities Act, the Company issued Wedbush a warrant, or the Warrant, to purchase 57,930 warrants of the Company's common stock, par value $0.001 per share. The Warrant will be exercisable for a period of seven years from the date of issuance at a per-share exercise price of $6.8423 (which exercise price shall be payable in cash or through a "cashless" exercise mechanic), subject to certain adjustments as specified in the Warrant.

Repurchases 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

The following discussion and analysis should be read in conjunction with our consolidated financial statements and related notes included elsewhere in this Annual Report on Form 10-K. This discussion may contain forward-looking statements based upon current expectations that involve risks and uncertainties, including those set forth under the heading "Risk Factors" and elsewhere in this Annual Report on Form 10-K. Our actual results and the timing of selected events discussed below could differ materially from those expressed in, or implied by, these forward-looking statements.

Overview

We are a clinical-stage oncology company focused on the discovery and development of engineered toxin bodies (ETBs) which are differentiated, targeted, biologic therapeutics for cancer. We believe ETBs offer a differentiated mechanism of action that may address some of the limitations associated with currently available cancer therapeutics. ETBs utilize a genetically engineered form of Shiga-like Toxin A subunit, or SLTA, a ribosome inactivating bacterial protein, that can be targeted to specifically destroy cancer cells.

Recent Developments

The Merger

On August 1, 2017, we completed our business combination with Molecular Templates OpCo, Inc., or what was then known as "Molecular Templates, Inc." ("Private Molecular"), in accordance with the terms of an Agreement and Plan of Merger and Reorganization (the "Merger Agreement"), dated as of March 16, 2017, by and among us (formerly known as Threshold Pharmaceuticals, Inc. (Nasdaq: THLD) ("Threshold"), Trojan Merger Sub, Inc. ("Merger Sub"), our wholly owned subsidiary, and Private Molecular, pursuant to which Merger Sub merged with and into Private Molecular, with Private Molecular surviving as our wholly owned subsidiary (the "Merger"). On August 1, 2017, in connection with and prior to the consummation of the Merger, we effected an 11-for-1 reverse stock split of the shares of our common stock (the "Reverse Stock Split"). Each outstanding share of Private Molecular common stock was converted into 7.7844 shares of common stock of the post-Merger combined company. As a result, we issued approximately 11.7 million shares of our common stock to the stockholders of Private Molecular in exchange for shares of common stock of Private Molecular. Threshold also assumed all of the stock options issued and outstanding under Private Molecular's 2009 Stock Plan, as amended, and issued and outstanding warrants of Private Molecular, with such stock options and warrants representing, following the Merger, the right to purchase a number of shares of Common Stock equal to 7.7844 multiplied by the number of shares of Private Molecular's common stock previously represented by such stock options and warrants, as applicable, after taking into account the Reverse Stock Split. Immediately after the Merger, the former Private Molecular stockholders, warrantholders and optionholders owned approximately 65.6% of the fully-diluted Common Stock, with Threshold's stockholders and warrantholders immediately prior to the Merger, whose warrants and shares of Threshold's common stock remained outstanding after the Merger, owning approximately 34.4% of the fully-diluted Common Stock, in each case, without giving effect to the issuance of shares of Common Stock in the concurrent financing and the Takeda Financing, and excluding, in each case, out-of-the money securities. Upon the consummation of the Merger, we changed our name to "Molecular Templates, Inc." For accounting purposes, Private Molecular is considered to have acquired Threshold in the Merger.

Concurrent Financing

On August 1, 2017, we entered into a Securities Purchase Agreement with Longitude Venture Partners III, L.P. and certain other accredited investors (the "Longitude Securities Purchase Agreement"), pursuant to which we sold an aggregate of 5,793,063 units (the "Units") having an aggregate purchase price of $40.0 million, each such Unit consisting of (i) one (1) share (the "Shares") of our common stock and (ii) a warrant (the "Warrants") to purchase 0.50 shares of our common stock (the "Private Placement"). The Private Placement was pursuant to equity commitment letter agreements entered into by and between us and certain investors in March and June 2017 (the "Equity Commitment Letters"). The purchase price per Unit was $6.9048. The Warrants will be exercisable for a

period of seven years from the date of their issuance at a per-share exercise price of $6.8423 (which exercise price shall be payable in cash or through a cashless exercise mechanic), subject to certain adjustments as specified in the Warrants.

Subsequent Financing

In connection with the execution on June 23, 2017 of the Multi-Target Takeda Agreement, as described below, we entered into a stock purchase agreement with Takeda (the "Takeda Stock Purchase Agreement"). Pursuant to the Takeda Stock Purchase Agreement, following the consummation of the Merger and Private Placement, Takeda purchased 2,922,993 shares of our common stock, at a price per share of $6.8423, for an aggregate purchase price of $20.0 million (the "Takeda Financing").

Business

We are a clinical-stage oncology company focused on the discovery and development of differentiated, targeted, biologic therapeutics for cancer. We utilize our proprietary biologic drug platform to design and generate engineered toxin bodies, or ETBs, which we believe provide a differentiated mechanism of action that may be beneficial in patients resistant to currently available cancer therapeutics. ETBs use a genetically engineered version of the Shiga-like Toxin A subunit, or SLTA, a ribosome inactivating bacterial protein. In its wild-type form, SLT is thought to induce its own entry into a cell when proximal to the cell surface membrane, self-route to the cytosol, and enzymatically and irreversibly shut down protein synthesis via ribosome inactivation. SLTA is normally coupled to its cognate Shiga-like Toxin B subunit, or SLTB, to target the CD77 cell surface marker, a non-internalizing glycosphingolipid. In Molecular's scaffold, a genetically engineered SLTA subunit with no cognate SLTB component is genetically fused to antibody domains or fragments specific to a cancer target, resulting in a biologic therapeutic that can identify the particular target and specifically kill the cancer cell. The antibody domains may be substituted with other antibody domains having different specificities to allow for the rapid development of new drugs to selected targets in cancer.

We are developing a pipeline of ETBs that we believe will provide a meaningful benefit to cancer patients. We plan to develop each of these as single agents and/or in combination with other therapies, as applicable.

MT-3724 is a first-generation ETB specific to the B-cell marker CD20 protein. We developed MT-3724 to directly target and kill cancer cells expressing CD20, a not normally internalizing cell surface receptor, for the treatment of NHL. The differentiated mechanism of action of MT-3724 involves binding to the surface protein CD20, forcing internalization into the target cell, retrograde transport to the cytosol and subsequent enzymatic and permanent ribosome-inactivation. We are currently conducting a Phase I study of MT-3724 in patients with relapsed/refractory NHL.

In February 2015, we commenced a Phase I clinical trial of our lead ETB candidate, MT-3724, targeting the cell surface antigen CD20 for the treatment of non-Hodgkin's lymphoma. The primary objective of the study was to determine the MTD of MT-3724. The secondary endpoint was to explore the early efficacy profile of MT-3724. We expect to report top-line results from this expansion trial starting in the first half of 2018. If results from this study are compelling, we intend to initiate a monotherapy Phase II study of MT-3724 in the relapsed or refractory DLBCL setting. We also expect to initiate up to two other Phase I/II clinical trials exploring the use of MT-3724 in various treatments settings in DLBCL patients with high unmet medical need. We expect to begin reporting top-line results from one of these trials starting in second half 2018 or first half 2019.

We are also developing MT-4019, an ETB candidate that is designed to target CD38-expressing myeloma cancer cells, and plan to submit an IND to the FDA in mid-2018 to initiate a Phase I clinical trial in the United States.

Additionally, we have several other ETB candidates in pre-clinical development targeting both solid and hematological cancers where we believe the differentiated mechanism of action innate to ETBs, ribosome inactivation, could play a significant role in treating cancer. These include ETBs targeting HER2 PD-L1.

As part of the Merger, Private Molecular agreed to use its commercially reasonable efforts to continue a Threshold evofosfamide Phase I clinical trial for a combination therapy until completion of such study, subject to the determination from time to time by the post-Merger board of directors of the Company that such continuation is in the best interests of the Company. In December 2015, Threshold announced that neither of two pivotal Phase III clinical trials of evofosfamide met its primary endpoint of demonstrating a statistically significant improvement in overall survival in pancreatic cancer. Based on a meaningful improvement in overall survival that was reported for a subgroup of 123 Asian patients, we will continue to engage in discussions with Japan's Pharmaceuticals and Medical Devices Agency, or PMDA, regarding potential registration pathways and additional clinical trials that would be required to bring evofosfamide to market. In the meantime, our current evofosfamide development strategy is limited to a company-sponsored Phase I clinical trial of evofosfamide in combination with an immune checkpoint antibody in collaboration with researchers and clinicians at The University of Texas MD Anderson Cancer Center, initiated March 1, 2017, and an investigator-sponsored clinical trial of evofosfamide in combination with antiangiogenic therapies in a variety of tumor types. We are conducting further analysis of the PK of evofosfamide to better understand the outcome of the Phase III studies and to evaluate the viability of further development in pancreatic cancer.

We are a clinical-stage company and have not generated revenue from product sales. Our ability to generate revenue sufficient to achieve profitability will depend heavily on the successful development and eventual commercialization of one or more of our ETB candidates. Since inception, we have incurred significant operating losses. For the years ended December 31, 2017 and 2016, we incurred net losses of $23.1 million and $11.0 million, respectively. As of December 31, 2017, we had an accumulated deficit of $64.5 million.

We expect to incur significant expenses and operating losses for the foreseeable future as we advance our lead ETB candidates through clinical trials, progress our pipeline ETB candidates from discovery through pre-clinical development, and seek regulatory approval and pursue commercialization of our ETB candidates. In addition, if we obtain regulatory approval for any of our ETB candidates, we expect to incur significant commercialization expenses related to product manufacturing, marketing, sales and distribution. In addition, we may incur expenses in connection with the in-license or acquisition of additional technology to augment or enable development of future ETB candidates. Furthermore, we expect to incur additional costs associated with operating as a public company, including significant legal, accounting, investor relations and other expenses that Private Molecular did not incur as a private company.

As a result, we will need additional financing to support our continuing operations. Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through a combination of public or private equity and debt financings or other sources, which may include collaborations with third parties. Adequate additional financing may not be available to us on acceptable terms, or at all. Our inability to raise capital as and when needed would have a negative impact on our financial condition and our ability to pursue our business strategy. We will need to generate significant revenue to achieve profitability, and we may never do so.

We expect that our existing cash and cash equivalents will enable us to fund our operating expenses and capital expenditure requirements into late 2019.

Collaboration Agreements

Takeda Pharmaceuticals

In October 2016, we entered into a collaboration and option agreement (the "Takeda Collaboration Agreement") with Millennium Pharmaceuticals, Inc., a wholly owned subsidiary of Takeda Pharmaceutical Company Ltd. ("Takeda") to discover and develop CD38-targeting ETBs, which includes MT-4019 for evaluation by Takeda. Under the terms of the agreement, we are responsible for providing to Takeda (i) new ETBs generated using Takeda's proprietary antibodies targeting CD38 and (ii) MT-4019 for *in vitro* and *in vivo* pharmacological and anti-tumor efficacy evaluations. We granted Takeda an exclusive option to negotiate and obtain an exclusive worldwide license to develop and commercialize any ETB that may result from this collaboration, including MT-4019. We are entitled to receive up to $2.0 million in technology access fees and cost reimbursement associated with our performance and completion of our obligations under the agreement. As of December 31, 2017, we have received $2.0 million under the Takeda Collaboration Agreement.

In June 2017, we entered into a multi-target collaboration and license agreement with Takeda (the "Takeda Multi-Target Agreement"), pursuant to which we will collaborate with Takeda to identify, generate and evaluate ETBs, against certain targets designated by Takeda. Takeda will designate certain targets of interest as the focus of the research. Takeda will provide to us targeting moieties against the designated targets. We will create and characterize ETBs against those targets and provide them to Takeda for further evaluation. Each party grants to the other nonexclusive rights in its intellectual property for purposes of the conduct of the research, and we agree to work exclusively with Takeda with respect to the designated targets. We are entitled to receive up to $5.0 million in technology access fees and research and development fees associated with our performance and completion of our obligations under the agreement. As of December 31, 2017, we have received $1.0 million under the Takeda Multi-Target Agreement.

In December 2017, Takeda nominated both targets under the Takeda Multi-Target Agreement. The Company is entitled to receive $4.0 million, in the aggregate, in April 2018, following the approval of the project plans for these two targets under the Takeda Multi-Target Agreement.

Under the Takeda Multi-Target Agreement, Takeda has an option to acquire an exclusive license under our intellectual property to develop, manufacture, commercialize and otherwise exploit ETBs against the designated targets. Upon exercise of the option, Takeda is obligated to use commercially reasonable efforts to develop and obtain regulatory approval of any licensed ETBs in major market countries, and thereafter to commercialize licensed ETBs in those countries. We are obligated to manufacture ETBs to support research and clinical development through Phase I clinical trials, provided that Takeda can assume manufacturing responsibility at any time.

Under the Multi-Target Agreement, license fees and research and early and late state development milestone payments which are based on various research and clinical milestones, including the initiation of certain clinical studies, the submission for approval of a drug candidate to certain regulatory authorities for marketing approval and the commercial launch of collaboration products could become due. We may receive net milestone payments of $25.0 million in aggregate through the exercise of the option to license ETBs under the Takeda Multi-Target Agreement. Additionally, we are entitled to receive up to approximately $547.0 million in additional milestone payments through preclinical and clinical development and commercialization. We are also entitled to tiered royalty payments of a mid-single to low-double digit percentage of net sales of any licensed ETBs, subject to certain reductions. Finally, we are entitled to receive up to $10 million in certain contingency fees.

The Takeda Multi-Target Agreement will expire on the expiration of the option period for the designated targets if Takeda does not exercise its options, or, following exercise of the option, on the later of the expiration of patent rights claiming the licensed ETB or ten years from first commercial sale of a licensed ETB. The Takeda Multi-Target Agreement may be sooner terminated by Takeda for convenience; or by us upon a change of control; or by either party for an uncured material breach of the agreement.

Financial Operations Overview

Revenue

Our revenue has consisted principally of revenue from collaboration partners and revenue from government grants. Grant revenue relates to our CPRIT grant for MT-3724. For the years ended December 31, 2017 and 2016, we recognized $1.0 million and $1.9 million in CPRIT grant revenues related to the pre-clinical and clinical development of MT-3724. CPRIT grant funds are provided to us in advance as conditional cost reimbursement where revenue is recognized as allowable costs are paid. Amounts collected in excess of revenue recognized are recorded as deferred revenue. Research and Development revenue primarily relates to our collaboration with Takeda. We have an ongoing research collaboration with Takeda Pharmaceuticals related to the evaluation of our ETB technology that was initiated in the fourth quarter 2016. The Takeda Collaboration Agreement and Takeda Multi-Target Agreement provide for upfront technology access fees, milestone payments and reimbursement payments. We will recognize revenue from these agreements in accordance with FASB ASC Topic 605, Revenue Recognition ("ASC 605"). Under ASC 605, revenue is recognized when all of the following criteria are met: (i) persuasive evidence of an arrangement exists; (ii) delivery has occurred or services have been rendered; (iii) the seller's price to the buyer is fixed or determinable; and (iv) collectability is reasonably assured. Amounts received prior to satisfying the revenue recognition criteria are recognized as deferred revenue in our balance sheet. For the

year ended December 31, 2017, we recognized $2.4 million in collaboration revenue related to research collaboration agreements. For theyear ended December 31, 2016, no revenue was recognized in collaboration revenue related to research collaboration agreements.

We have no products approved for sale. Other than the sources of revenue described above, we do not expect to receive any revenue from any ETB candidates that we develop, including MT-3724, MT-4019 and other pre-clinical ETB candidates, until we obtain regulatory approval and commercializes such products, or until we potentially enter into collaborative agreements with third parties for the development and commercialization of such candidates.

Research and Development Expenses

Research and development expenses consist principally of:

- salaries for research and development staff and related expenses, including stock-based compensation expenses;
- costs for current good manufacturing practices ("cGMP") manufacturing of drug substances and drug products by contract manufacturers;
- fees and other costs paid to clinical trials sites and clinical research organizations ("CROs") in connection with the performance of clinical trials and preclinical testing;
- costs for consultants and contract research;
- costs of laboratory supplies and small equipment, including maintenance; and
- depreciation of long-lived assets.

For the years ended December 31, 2017 and 2016, we incurred research and development costs of $9.5 million and $8.0 million, respectively. Our research and development expenses may vary substantially from period to period based on the timing of our research and development activities, including the initiation and enrollment of patients in clinical trials and manufacture of drug materials for clinical trials.

We expect research and development expenses to increase as we advance the clinical development of MT-3724 and further advances the research and development of our pre-clinical ETB candidates, including MT-4019, and other earlier stage products. The successful development of our ETB candidates is highly uncertain. At this time, we cannot reasonably estimate the nature, timing and estimated costs of the efforts that will be necessary to complete the development of, or the period, if any, in which material net cash inflows may commence from, any of our ETB candidates. This is due to numerous risks and uncertainties associated with developing drugs, including the uncertainty of:

- the scope, rate of progress and expense of our research and development activities;
- clinical trials and early-stage results;
- the terms and timing of regulatory approvals; and
- the ability to market, commercialize and achieve market acceptance for MT-3724, MT-4019 or any other ETB candidate that we may develop in the future.

Any of these variables with respect to the development of MT-3724, MT-4019 or any other ETB candidate that we may develop could result in a significant change in the costs and timing associated with the development of MT-3724, MT-4019 or such other ETB candidates. For example, if the FDA, the EMA or other regulatory authority were to require us to conduct pre-clinical and clinical studies beyond those which we currently anticipate will be required for the completion of clinical development or if we experience significant delays in enrollment in any clinical trials, we could be required to expend significant additional financial resources and time on the completion of our clinical development programs.

General and Administrative Expenses

Our general and administrative expenses consist principally of:

- salaries for employees other than research and development staff, including stock-based compensation expenses;
- professional fees for auditors and other consulting expenses related to general and administrative activities;
- professional fees for legal services related to the protection and maintenance of our intellectual property and regulatory compliance;
- cost of facilities, communication and office expenses;
- information technology services; and
- depreciation of long-lived assets.

We expect that our general and administrative costs will increase in the future as our business expands and we increase our headcount to support the expected growth in our operating activities. Additionally, we expect these expenses will also increase in the future as we incur additional costs associated with operating as a public company. These increases will likely include additional legal fees, accounting and audit fees, management board and supervisory board liability insurance premiums and costs related to investor relations. In addition, we expect to grant stock-based compensation awards to key management personnel and other employees.

Other Income (Expense)

Other income (expense) primarily consists of loss on conversion of notes and change in fair value of warrant liabilities.

Results of Operations

Comparison for the Years Ended December 31, 2017 and 2016

The table below summarizes Molecular's results of operations for the years ended December 31, 2017 and 2016.

	Years ended December 31,	
	2017	2016
Research and development revenue	2,408	—
Grant revenue	987	1,880
Total revenue	3,395	1,880
Research and development expenses	9,487	8,017
General and administrative expenses	11,755	4,482
Total operating expenses	21,242	12,499
Loss from operations	(17,847)	(10,619)
Interest and other income, net	51	19
Interest expense	(853)	(431)
Change in fair value of warrant liabilities	128	3
Loss on conversion of notes	(4,619)	—
Net loss	$ (23,140)	$ (11,028)

Grant Revenue

Grant revenue decreased $0.9 million during the year ended December 31, 2017 as compared to the year ended December 31, 2016. The decrease was primarily attributable to the decrease in CPRIT grant revenues recognized due to higher drug manufacturing related costs for MT-3724 in 2016.

Research and development revenue

Research and Development Revenues for the year ended December 31, 2017 were comprised of research and development revenues from our collaboration with Takeda of $1.9 million, and research and development revenues from our collaboration with an undisclosed pharmaceutical company of $0.5 million. Refer to footnote 4 "Research and Development Agreements" to the consolidated financial statement in this document for further detail about the collaboration agreements. No Research and Development Revenue was recognized in 2016.

Research and Development Expenses

The table below summarizes Molecular's research and development costs for the years ended December 31, 2017 and 2016.

Research and development expenses by cost type:	**Years ended December 31,**	
	2017	**2016**
Employee compensation	$ 2,903	$ 1,140
Program costs	5,156	6,344
Laboratory costs	843	487
Other research and development costs	585	46
Total research and development expenses	$ 9,487	$ 8,017

Research and development expenses increased $1.5 million during the year ended December 31, 2017 as compared to the year ended December 31, 2016. The increase was primarily due to increased outsourced program expenses, along with increased payroll related costs due to increased headcount.

From a program perspective, all of our research and development expenses relate to the discovery and development of ETBs. The decrease in program costs in 2017 compared to 2016 is primarily due to the $3.6 million decrease in costs related to MT-3724, partially offset by a $1.1 million increase in costs related to CD 38 programs and a $0.6 million increase in costs related to PD-L1.

The risks and uncertainties associated with our research and development projects are discussed more fully in the "Risk Factors" section in Part I, Item 1A of this Annual Report on Form 10-K. As a result of the risks and uncertainties discussed in the "Risk Factors" section and above, we are unable to determine with any degree of certainty the duration and completion costs of our research and development projects, anticipated completion dates or when and to what extent we will receive cash inflows from the commercialization and sale of a product candidate. To date, we have not commercialized any of our product candidates and in fact may never do so.

General and Administrative Expenses

General and administrative expenses increased $7.3 million during the year ended December 31, 2017 compared to the year ended December 31, 2016. The increase was primarily attributable to costs associated being a publicly traded company, along with increased payroll related costs due to increased headcount.

Interest Expense

Interest expense increased $0.4 million during the year ended December 31, 2017 as compared to the year ended December 31, 2016, primarily due to interest payable on the bridge loan payable to Threshold, leading up to the Merger along with interest payable on the SVB Bridge Loan.

Loss on conversion of notes

The Loss on Conversion of Notes during the year ended December 31, 2017 was due to a loss recording as part of the Merger, related to the conversion of convertible notes to common stock.

Liquidity and Capital Resources

Sources of Funds

We have devoted substantially all of our resources to developing our ETB candidates and platform technology, building our intellectual property portfolio, developing our supply chain, conducting business planning, raising capital and providing for general and administrative support for these operations. We plan to increase our research and development expenses for the foreseeable future as we continue to advance MT-3724, MT-4019 and our earlier-stage pre-clinical programs. At this time, due to the inherently unpredictable nature of preclinical and clinical development and given the early stage of our programs and product candidates, we cannot reasonably estimate the costs we will incur and the timelines that will be required to complete development, obtain marketing approval and commercialize our products, if and when approved. For the same reasons, we are also unable to predict when, if ever, we will generate revenue from product sales or whether, or when, if ever, we may achieve profitability. Clinical and preclinical development timelines, the probability of success and development costs can differ materially from expectations. In addition, we cannot forecast which products, if and when approved, may be subject to future collaborations, when such arrangements will be secured, if at all, and to what degree such arrangements would affect our development plans and capital requirements. We have incurred an accumulated deficit of $64.5 million through December 31, 2017. We expect to incur substantial additional losses in the future as we expand our research and development activities. Based on our current research and development plans, we expect that our existing cash and cash equivalents, will enable us to fund our operating expenses and capital expenditure requirements into late 2019.

Our financial statements as of December 31, 2017 have been prepared under the assumption that we will continue as a going concern for the next 12 months. To date, we have financed our operations through private placements of equity securities, a reverse merger, and upfront and milestone payments received from our collaborators under our research evaluation agreements, as well as funding from governmental bodies and bank and bridge loans. Since our inception, we raised gross proceeds of $78.2 million from private placements of equity securities, including $40 million from the Private Placement in August 2017, $20 million from the Takeda Financing in August 2017. Since our inception, we have also received aggregate gross proceeds of $3.5 million from our collaborators, received $10.0 million in proceeds from related-party convertible promissory notes, received $6.0 million in proceeds from bank loan from Silicon Valley Bank (“SVB”); and received $15.2 million from Threshold.

In November 2016, we received notice that we have been awarded a second CPRIT product development grant totaling $15.2 million to fund development of our CD38-targeting ETB MT-4019, and we are currently in the process of negotiating the terms of the contract with CPRIT.

We entered into a loan and security agreement with SVB, or the SVB Loan Agreement on April 30, 2015, which allows for aggregate borrowings of up to $6.0 million, subject to our achievement of certain milestones. We borrowed an aggregate of $6.0 million under the SVB Loan Agreement through December 31, 2017. We paid $2.4 million in principal and approximately $237,000 in interest for year ended December 31, 2017. The loan matures on April 30, 2019 and is secured by substantially all our assets.

As of December 31, 2017, we had cash and cash equivalents of $58.9 million. As of December 31, 2016, we had cash and cash equivalents of $1.7 million.

Cash Flows

Comparison of Years Ended December 31, 2017 and 2016

The table below summarizes Molecular's cash flows for the years ended December 31, 2017 and 2016.

(in thousands)	Years ended December 31,	
	2017	2016
Net cash used in operating activities	$ (14,264)	$ (9,028)
Net cash provided by / (used in) investing activities	9,715	(689)
Net cash provided by financing activities	61,743	7,188
Net increase (decrease) in cash and cash equivalents	$ 57,194	$ (2,529)

The increase in net cash used in operating activities to $14.3 million for the year ended December 31, 2017 from $9.0 million for the year ended December 31, 2016 was primarily due to the $12.1 million increase in the net loss, partially offset by non-cash loss on conversion of notes recorded in 2017 of $4.6 million and increased non-cash stock based compensation of $1.7 million, as well as a $1.2 million increase in accounts payable.

The increase in net cash provided by investing activities to $9.7 million for the year ended December 31, 2017 from net cash used in investing activities of $0.7 million for the December 31, 2016 was primarily due to the $11.2 million cash received from the Merger transaction.

The increase in net cash provided by financing activities to $61.7 million for the year ended December 31, 2017 from $7.2 million for the year ended December 31, 2016 was primarily due to the receipt in August 2017 of $57.6 million in net proceeds from the issuance of common stock and warrants in the PIPE and concurrent financings, following the Merger.

Operating and Capital Expenditure Requirements

Other than for one year, we have not achieved profitability since our inception and had an accumulated deficit of $64.5 million as of December 31, 2017. We expect to continue to incur significant operating losses for the foreseeable future as we continue our research and development efforts and seeks to obtain regulatory approval and commercialization of our ETB candidates.

We expect our expenses to increase substantially in connection with our ongoing development activities related to MT-3724, MT-4019, our pre-clinical programs, and expands our operating capabilities. In addition, we expect to incur additional costs associated with operating as a public company. We anticipate that our expenses will increase substantially if and as we:

- complete the ongoing Phase I expansion clinical trial of MT-3724, our lead ETB candidate;
- initiate other Phase Ib and Phase II clinical trials of MT-3724;
- conduct the Phase I clinical trial of MT-4019, our second ETB candidate;
- continue the research and development of our other ETB candidates, including completing pre-clinical studies and commencing clinical trials;
- seek to enhance our technology platform using our antigen-seeding technology approach to immuno-oncology;
- seek regulatory approvals for any ETB candidates that successfully complete clinical trials;
- potentially establish a sales, marketing and distribution infrastructure and scale up manufacturing capabilities to commercialize any products for which we may obtain regulatory approval;

- add clinical, scientific, operational, financial and management information systems and personnel, including personnel to supportour product development and potential future commercialization efforts and to support our increased operations; and
- experience any delays or encounter any issues resulting from any of the above, including but not limited to failed studies, complex results, safety issues or other regulatory challenges.

We expect that our existing cash and cash equivalents, will enable us to fund our operating expenses and capital expenditure requirements into late 2019. We have based this estimate on assumptions that may prove to be wrong, and we may use our available capital resources sooner than we currently expect.

Because of the numerous risks and uncertainties associated with the development of MT-3724, MT-4019 and our other pre-clinical programs, and because the extent to which we may enter into collaborations with third parties for development of these ETB candidates is unknown, we are unable to estimate the amounts of increased capital outlays and operating expenses associated with completing the research and development of our ETB candidates. Our future capital requirements for MT-3724, MT-4019 or our other pre-clinical programs will depend on many factors, including:

- the progress, timing and completion of pre-clinical testing and clinical trials for our current or any future ETB candidates;
- the number of potential new ETB candidates we identify and decide to develop;
- the costs involved in growing our organization to the size needed to allow for the research, development and potential commercialization of our current or any future ETB candidates;
- the costs involved in filing patent applications and maintaining and enforcing patents or defending against claims or infringements raised by third parties;
- the time and costs involved in obtaining regulatory approval for our ETB candidates and any delays we may encounter as a result of evolving regulatory requirements or adverse results with respect to any of these ETB candidates;
- any licensing or milestone fees we might have to pay during future development of our current or any future ETB candidates;
- selling and marketing activities undertaken in connection with the anticipated commercialization of our current or any future ETB candidates and costs involved in the creation of an effective sales and marketing organization; and
- the amount of revenues, if any, we may derive either directly or in the form of royalty payments from future sales of our ETB candidates, if approved.

Identifying potential ETB candidates and conducting pre-clinical testing and clinical trials is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data or results required to obtain marketing approval and achieve product sales. In addition, our ETB candidates, if approved, may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of products that we do not expect to be commercially available for many years, if ever. Accordingly, we will need to obtain substantial additional funds to achieve our business objectives.

Adequate additional funds may not be available to us on acceptable terms, or at all. To the extent that we raise additional capital through the sale of equity or convertible debt securities, stockholders' ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect their rights as stockholders. Additional debt financing and equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends and may require the issuance of warrants, which could potentially dilute stockholders' ownership interest.

If we raise additional funds through collaborations, governmental grants, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams, research programs or ETB candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development programs or any future commercialization efforts or grant rights to develop and market ETB candidates that we would otherwise prefer to develop and market ourselves.

Critical Accounting Policies and Use of Estimates

The discussion and analysis of our financial condition and results of operations are based on our financial statements, which have been prepared in accordance with U.S. GAAP. The preparation of these financial statements requires management to make estimates and assumptions that affect reported amounts of assets and liabilities as of the date of the balance sheet and reported amounts of revenues and expenses for the periods presented. Management makes estimates and exercises judgment in income taxes, revenue recognition, research and development expenses, stock-based compensation and preferred stock. Judgments must also be made about the disclosure of contingent liabilities. These estimates and assumptions form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. We periodically evaluate our estimates and judgments, including those described in greater detail below, in light of changes in circumstances, facts and experience.

We have identified the following accounting policies that we believe require application of management's most subjective judgments, often requiring the need to make estimates about the effect of matters that are inherently uncertain and may change in subsequent periods. Our actual results could differ from these estimates and such differences could be material.

Revenue Recognition

The grants we have received from governmental bodies, such as CPRIT, are conditional cost reimbursement grants, and we recognize revenue as allowable costs are paid. Amounts collected in excess of revenue recognized are recorded as deferred revenue.

The collaboration and option agreements with certain of our customers are multiple-element arrangements under ASC 605-25. These agreements are multiple-element arrangements; whereby fixed or determinable contract consideration is allocated to the deliverables with stand-alone value and revenue is recognized for each such deliverable according to the method appropriate for each deliverable. The license to the Company's background intellectual property for use in performance of the agreement does not have stand-alone value, and thus is combined into one unit of accounting with the research and development services. Revenues are recognized over the period that the research and development services occur. Amounts collected in excess of revenue recognized are recorded as deferred revenue. For further information regarding our revenue recognition, please see Note 1 ("Summary of Significant Accounting Policies") to our audited consolidated financial statements for the year ended December 31, 2017, included in this Annual Report on Form 10-K.

Research and Development Expenses

As part of the process of preparing our financial statements, we are required to estimate our accrued expenses as of each balance sheet date. This process involves reviewing open contracts and purchase orders, communicating with our staff to identify services that have been performed on our behalf and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of the actual cost. The majority of our service providers invoice us monthly in arrears for services performed or when contractual milestones are met. We make estimates of our accrued expenses as of each balance sheet date based on facts and circumstances known to us at that time. We periodically confirm the accuracy of our estimates with the service providers and make adjustments, if necessary. The significant estimates in our accrued research and development expenses include the costs incurred for services performed by our vendors and clinical trial sites in connection with research and development activities for which we have not yet been invoiced.

We record our expenses related to research and development activities based on our estimates of the services received and efforts expended pursuant to quotes and contracts with vendors that conduct research and development on our behalf. The financial terms of these agreements are subject to negotiation, vary from contract to contract and may result in uneven payment flows. There may be instances in which payments made to our vendors will exceed the level of services provided and result in a prepayment of the research and development expenses. In accruing service fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from our estimate, we adjust the accrual or prepaid expense accordingly. Non-refundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made.

Although we do not expect our estimates to be materially different from amounts actually incurred, if our estimates of the status and timing of services performed differ from the actual status and timing of services performed, it could result in our reporting amounts that are too high or too low in any particular period. To date, there have been no material differences between our estimates of such expenses and the amounts actually incurred.

Income Taxes

For the years ended December 31, 2017 and 2016, we did not record an income tax provision due to net operating losses and the inability to record an income tax benefit. As of December 31, 2017, we had accumulated approximately $63.2 million and $7.6 million in federal and state net operating loss carryforwards, respectively, to reduce future taxable income. If not utilized, our federal and state net operating loss carryforwards begin to expire in 2021 and 2017 for federal and state tax purposes, respectively. Our net operating loss carryforwards are subject to certain limitations on annual utilization in case of changes in ownership, as defined by federal and state tax laws.

At December 31, 2017, we had federal research and development tax credits of approximately $1.1 million, which expire in the year beginning 2022, and state research and development tax credits of approximately $4.9 million, which have no expiration date.

Molecular has not recorded a benefit from our net operating loss or research credit carryforwards because we believe that it is uncertain that we will have sufficient income from future operations to realize the carryforwards prior to their expiration. Accordingly, we have established a valuation allowance against the deferred tax asset arising from the carryforwards.

Stock-Based Compensation

Our accounts for stock-based compensation expense related to stock options granted to employees, non-employees, and members of our board of directors under our 2014 Equity Incentive Plan, as amended, and our 2009 Stock Plan, as amended, by estimating the fair value of each stock option or award on the date of grant using the Black-Scholes model. We recognize stock-based compensation expense on a straight-line basis over the vesting term.

Recent Accounting Pronouncements Not Yet Adopted

For a discussion of recently issued accounting pronouncements and interpretations not yet adopted by us, please see Note 1 (“Summary of Significant Accounting Policies”) to our audited financial statements for the year ended December 31, 2017, included in this Annual Report on Form 10-K.

Off-Balance Sheet Arrangements

We did not have during the periods presented, and we do not currently have, any off-balance sheet arrangements, as defined in the rules and regulations of the SEC.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISKS

Molecular is exposed to a variety of financial risks. Molecular's overall risk management program seeks to minimize potential adverse effects of these financial risks on its financial performance.

Credit Risk

Molecular considers all of its material counterparties to be creditworthy. Molecular considers the credit risk for each of its counterparties to be low and does not have a significant concentration of credit risk at any of its counterparties.

Liquidity Risk

Molecular manages its liquidity risk by maintaining adequate cash reserves at banking facilities, and by continuously monitoring its cash forecasts, its actual cash flows and by matching the maturity profiles of financial assets and liabilities.

Market Risk

Molecular is not subject to any significant foreign exchange risk and interest rate risk.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

MOLECULAR TEMPLATES, INC.
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Molecular Templates, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheet of Molecular Templates, Inc. (the Company) as of December 31, 2017, the related consolidated statements of operations and comprehensive loss, convertible preferred shares and stockholders' equity (deficit) and cash flows for the year ended December 31, 2017, and the related notes collectively referred to as the "consolidated financial statements". In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2017, and the results of its operations and its cash flows for the one year period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

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

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

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2017.
Austin, Texas
March 30, 2018

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders
Molecular Templates, Inc.
Austin, Texas

We have audited the balance sheet of Molecular Templates, Inc., as of December 31, 2016 and the related statements of operations, changes in stockholders' deficit, and cash flows for the year then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provide a reasonable basis for our opinion.

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

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As described in Note 3 (not presented herein) to the 2016 financial statements, the Company has suffered recurring losses from operations and has a net capital deficiency that raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 3 (not presented herein) to the 2016 financial statements. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

/s/ BDO USA, LLP

Austin, Texas

February 22, 2017, except for the effects on the statement of stockholders' deficit of the Exchange Ratio described in Note 3 and the related disclosure within Note 2 and Note 13, as to which the date is March 30, 2018

MOLECULAR TEMPLATES, INC.
CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share data)

	December 31,	
	2017	**2016**
ASSETS		
Current assets:		
Cash and cash equivalents	$ 58,910	$ 1,716
Prepaid expenses	1,485	120
Other current assets	19	7
Total current assets	60,414	1,843
Property and equipment, net	1,952	334
In-process research and development	26,623	—
Other assets	1,402	921
Total assets	$ 90,391	$ 3,098
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 2,517	$ 934
Accrued liabilities	2,690	1,210
Current portion of long-term debt	2,400	2,400
Related party debt (Note 8)	—	7,315
Deferred revenue	2,765	1,870
Other current liabilities	70	36
Total current liabilities	10,442	13,765
Warrant liabilities	954	49
Long-term debt, net of current portion	1,078	3,165
Other liabilities	628	53
Total liabilities	13,102	17,032
Commitments and contingencies (Note 10)		
Redeemable convertible preferred stock	—	25,871
Stockholders' equity (deficit):		
Common stock, $0.001 par value:		
Authorized: 150,000,000 shares at December 31, 2017 and 2016; Issued and outstanding: 26,898,330 and 214,641 shares at December 31, 2017 and 2016, respectively.	27	—
Additional paid-in capital	141,733	568
Accumulated other comprehensive loss	—	—
Accumulated deficit	(64,471)	(40,373)
Total stockholders' equity (deficit)	77,289	(39,805)
Total liabilities and stockholders' equity (deficit)	$ 90,391	$ 3,098

The accompanying notes are an integral part of these consolidated financial statements.

MOLECULAR TEMPLATES, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(in thousands, except share and per share data)

	Years Ended December 31,	
	2017	2016
Research and development revenue	$ 2,408	$ —
Grant revenue	987	1,880
Total revenue	3,395	1,880
Operating expenses:		
Research and development	9,487	8,017
General and administrative	11,755	4,482
Total operating expenses	21,242	12,499
Loss from operations	(17,847)	(10,619)
Interest and other income, net	51	19
Interest expense	(853)	(431)
Change in fair value of warrant liabilities	128	3
Loss on conversion of notes	(4,619)	—
Net loss	(23,140)	(11,028)
Deemed dividends on preferred stock	(958)	(1,572)
Net loss attributable to common shareholders	$ (24,098)	$ (12,600)
Net loss per share attributable to common shareholders:		
Basic and diluted	$ (2.11)	$ (59.04)
Weighted average number of shares used in net loss per share calculations:		
Basic and diluted	11,400,881	213,420
Other comprehensive loss:		
Unrealized gain (loss) on available-for-sale securities	—	—
Comprehensive loss	$ (24,098)	$ (12,600)

The accompanying notes are an integral part of these consolidated financial statements.

MOLECULAR TEMPLATES, INC.
CONSOLIDATED STATEMENTS OF CONVERTIBLE PREFERRED STOCK and STOCKHOLDERS' EQUITY (DEFICIT)
(in thousands, except share data)

	Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount				
Balances, December 31, 2015	9,116,405	$ 24,299	213,128	$ —	$ 456	$ —	$ (27,773)	$ (27,317)
Issuance of common stock pursuant to stock plans	—	—	1,513	—	3	—	—	3
Stock-based compensation	—	—	—	—	109	—	—	109
Deemed dividends on preferred stock	—	1,572	—	—	—	—	(1,572)	(1,572)
Change in unrealized gain (loss) on marketable securities	—	—	—	—	—	—	—	—
Net income	—	—	—	—	—	—	(11,028)	(11,028)
Balances, December 31, 2016	9,116,405	25,871	214,641	—	568	—	(40,373)	(39,805)
Issuance of common stock pursuant to stock plans	—	—	17,430	—	61	—	—	61
Deemed dividends on preferred stock	—	958	—	—	—	—	(958)	(958)
Conversion of preferred stock to common stock in connection with merger	(9,116,405)	(26,829)	9,220,478	9	26,820	—	—	26,829
Conversion of preferred stock warrants to common stock in connection with merger	—	—	12,653	—	87	—	—	87
Conversion of redeemable convertible notes to common stock	—	—	2,208,716	2	15,103	—	—	15,105
Issuance of common stock and assumption of options in connection with the merger	—	—	6,508,356	7	39,663	—	—	39,670
Issuance of common stock to Takeda and certain other investors, net of issuance costs of $2.4 million	—	—	8,716,056	9	57,639	—	—	57,648
Stock-based compensation	—	—	—	—	1,792	—	—	1,792
Net loss	—	—	—	—	—	—	(23,140)	(23,140)
Balances, December 31, 2017	—	$ —	26,898,330	$ 27	$ 141,733	$ —	$ (64,471)	77,289

The accompanying notes are an integral part of these consolidated financial statements.

MOLECULAR TEMPLATES, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Years Ended December 31,	
	2017	**2016**
Cash flows from operating activities:		
Net loss	$ (23,140)	$ (11,028)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	155	65
Stock-based compensation expense	1,792	109
Amortization of debt discount and accretion related to long term liabilities	342	13
Change in common stock warrant fair value	(128)	(3)
Loss on conversion of notes	4,619	—
Loss on disposal of equipment	2	5
Changes in operating assets and liabilities:		
Prepaid expenses	(410)	—
Other current assets	(12)	84
Other assets	(81)	—
Accounts payable	1,209	557
Accrued liabilities	155	800
Other current liabilities	20	0
Other liabilities	318	0
Deferred revenue	895	370
Net cash used in operating activities	(14,264)	(9,028)
Cash flows from investing activities:		
Cash received from merger transaction	11,216	—
Purchases of property and equipment	(1,101)	(101)
Increase in other assets	(400)	(588)
Net cash provided by (used in) investing activities	9,715	(689)
Cash flows from financing activities:		
Payments of capital lease obligations	(43)	(44)
Proceeds from issuance of long-term debt	—	3,000
Repayment of long-term debt	(2,400)	(400)
Retirement of stock warrants	(208)	—
Proceeds from issuance of related party debt	2,685	4,630
Proceeds from stock option exercise	61	2
Proceeds from promissory note	4,000	—
Proceeds from issuance of common stock and warrants, net of offering expenses	57,648	—
Net cash provided by financing activities	61,743	7,188
Net increase in cash and cash equivalents	57,194	(2,529)
Cash and cash equivalents, beginning of period	1,716	4,245
Cash and cash equivalents, end of period	$ 58,910	$ 1,716
Supplemental Cash Flow Information		
Cash paid for interest	$ 250	$ 230
Non-Cash Investing and Financing Activities		
Deemed dividends on preferred stock	$ 958	$ 1,573
Conversion of preferred stock	$ 26,829	$ —
Conversion of related party debt	$ 10,486	$ —
Conversion of warrant liability	$ 87	$ —
Capital lease additions to fixed assets	$ 291	$ 110
Fixed asset additions in accounts payable	$ 382	$ 20
Warrants issued with debt	$ —	$ 18

The accompanying notes are an integral part of these consolidated financial statements.

NOTE 1—SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Nature of the Business

Molecular Templates, Inc. (the "Company" or "Molecular"), is clinical stage a biopharmaceutical company formed in 2001, with a biologic therapeutic platform for the development of novel targeted therapeutics for cancer and other diseases, headquartered in Austin, Texas. The Company's initial focus is on the research and development of therapeutic compounds for a variety of cancers. Molecular operates its business as a single segment, as defined by U.S. generally accepted accounting principles ("U.S. GAAP").

On August 1, 2017, the Company, formerly known as Threshold Pharmaceuticals, Inc. (Nasdaq: THLD) ("Threshold"), completed its business combination with the entity then known as Molecular Templates, Inc., a private Delaware Corporation ("Private Molecular"), in accordance with the terms of an Agreement and Plan of Merger and Reorganization, (the "Merger Agreement"), dated as of March 16, 2017, by and among Threshold, Trojan Merger Sub, Inc., a wholly owned subsidiary of Threshold ("Merger Sub"), and Private Molecular, pursuant to which Merger Sub merged with and into Private Molecular, with Private Molecular surviving as a wholly-owned subsidiary of Threshold (the "Merger"). Also on August 1, 2017, in connection with, and prior to the completion of, the Merger, Threshold effected an 11-for-1 reverse stock split of its common stock (the "Reverse Stock Split") and changed its name to "Molecular Templates, Inc." Threshold also assumed all of the stock options issued and outstanding under Private Molecular's 2009 Stock Plan, as amended, and issued and outstanding warrants of Private Molecular, with such stock options and warrants representing, following the Merger, the right to purchase a number of shares of Common Stock equal to 7.7844 multiplied by the number of shares of Private Molecular's common stock previously represented by such stock options and warrants, as applicable, after taking into account the Reverse Stock Split. Immediately after the Merger, the former Private Molecular stockholders, warrantholders and optionholders owned approximately 65.6% of the fully-diluted Common Stock, with Threshold's stockholders and warrantholders immediately prior to the Merger, whose warrants and shares of Threshold's common stock remained outstanding after the Merger, owning approximately 34.4% of the fully-diluted Common Stock, in each case, without giving effect to the issuance of shares of Common Stock in the concurrent financing and the Takeda Financing, and excluding, in each case, out-of-the money securities. Following the completion of the Merger, the business conducted by the Company became primarily the business conducted by Private Molecular as described in the paragraph above.

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America and include the accounts of the Company and its wholly owned subsidiary, and reflect the elimination of intercompany accounts and transactions.

Reverse Stock Split

On August 1, 2017, in connection with, and prior to the completion of, the Merger, Threshold effected a Reverse Stock Splitthrough an amendment to its amended and restated certificate of incorporation as part of the Merger. As of the effective time of the reverse stock split, every eleven shares of the Company's issued and outstanding common stock were converted into one issued and outstanding share of common stock, without any change in par value per share. The reverse stock split affected all shares of the Company's common stock outstanding immediately prior to the effective time of the reverse stock split, as well as the number of shares of common stock available for issuance under the Company's equity incentive plans. In addition, the reverse stock split effected a reduction in the number of shares of common stock issuable upon the exercise of stock options or warrants outstanding immediately prior to the effectiveness of the reverse stock split. All references to shares of common stock and per share data for all periods presented in the accompanying financial statements and notes thereto have been adjusted to reflect the reverse stock split on a retroactive basis.

Reclassifications

Certain amounts in the prior year's presentations have been reclassified to conform to the current presentation. These reclassifications had no effect on previously reported net loss.

Accounting Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America as defined by the Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") requires

management to make estimates and assumptions that affect certain reported amounts and disclosures. Accordingly, actual results could differ from those estimates.

Net Loss per Share

Basic net loss per share is calculated by dividing the net loss applicable to common stockholders by the weighted average number of shares of Common Stock outstanding during the period without consideration of Common Stock equivalents. Since the Company was in a loss position for all periods presented, diluted net loss per share is the same as basic net loss per share for all periods, as the inclusion of all potential common shares outstanding is anti-dilutive.

Cash and Cash Equivalents

The Company considers temporary investments with original maturities of three months or less from date of purchase to be cash equivalents.

Concentration of Credit Risk and Other Risks and Uncertainties

Financial instruments that potentially subject the Company to concentrations of risk consist principally of cash and cash equivalents, investments, long term debt and accounts receivable.

The Company's cash, cash equivalents are with two major financial institutions in the United States.

The Company performs an ongoing credit evaluation of its strategic partners' financial conditions and generally does not require collateral to secure accounts receivable from its strategic partners. The Company's exposure to credit risk associated with non-payment will be affected principally by conditions or occurrences within Takeda Pharmaceutical Company Ltd. ("Takeda"). Approximately 56% of total revenues for the year ended December 31, 2017, were derived from Takeda. There were no accounts receivable due from Takeda at December 31, 2017 or 2016. See also Note 4, Research and Development Collaboration Agreements, regarding the collaboration agreements with Takeda.

Drug candidates developed by the Company may require approvals or clearances from the FDA or international regulatory agencies prior to commercial sales. There can be no assurance that the Company's drug candidates will receive any of the required approvals or clearances. If the Company were to be denied approval or clearance or any such approval or clearance were to be delayed, it would have a material adverse impact on the Company.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation. Major additions and improvements are capitalized while maintenance and repairs that do not improve or extend the useful life of the respective asset are expensed. Depreciation of property and equipment is computed using the straight-line method over the estimated useful lives of the assets, which range from five to seven years. Leasehold improvements are amortized over the shorter of the lease term or the estimated useful lives of the assets.

Impairment of Long-Lived Assets

When events, circumstances and/or operating results indicate that the carrying values of long-lived assets might not be recoverable through future operations, the Company prepares projections of the undiscounted future cash flows expected to result from the use of the assets and their eventual disposition. If the projections indicate that the recorded amounts are not expected to be recoverable, such amounts are reduced to estimated fair value. Fair value is estimated based upon internal evaluation of each asset that includes quantitative analyses of net revenue and cash flows, review of recent sales of similar assets and market responses based upon discussions in connection with offers received from potential buyers. Certain factors used for these types of nonrecurring fair value measurements are considered Level 3 inputs. Management determined there was no impairment during the years ended December 31, 2017 and 2016.

Revenue Recognition

The Company recognizes revenue when persuasive evidence of an arrangement exists, the related services have been performed, the price is fixed and determinable and collectability is reasonably assured.

The Company receives funds from a state financial assistance program. The state award is a conditional cost reimbursement grant and revenue is recognized as allowable costs are incurred. Amounts collected in excess of revenue recognized are recorded as deferred revenue.

The Company enters into collaboration and option agreements with certain customers. Under the terms of one such agreement, the Company is responsible for providing (i) a license to the Company's background intellectual property for use in performance of the agreement, and (ii) research and development services. Under ASC 605-25, the agreement is a multiple-element arrangement; under such an arrangement, fixed or determinable contract consideration is allocated to the deliverables with stand-alone value and revenue is recognized for each such deliverable according to the method appropriate for each deliverable. The license to the Company's background intellectual property for use in performance of the agreement does not have stand-alone value, and thus is combined into one unit of accounting with the research and development services. Revenues are recognized over the period that the research and development services occur. Amounts collected in excess of revenue recognized are recorded as deferred revenue.

Income Taxes

Income taxes are recorded in accordance with ASC 740, Accounting for Income Taxes ("ASC 740"), which provides for deferred taxes using an asset and liability approach. The Company recognizes deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements or tax returns. The Company determines its deferred tax assets and liabilities based on differences between financial reporting and tax bases of assets and liabilities, which are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. Valuation allowances are provided if based upon the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized.

ASC 740 clarifies the accounting for uncertainty in income taxes recognized in the financial statements and provides that a tax benefit from an uncertain tax position may be recognized when it is more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, based on the technical merits. This interpretation also provides guidance on measurement, derecognition, classification, interest and penalties, accounting in interim periods and disclosure. The Company's policy for recording interest and penalties associated with uncertain tax positions is to record such items as a component of tax expense.

Stock-Based Compensation

The Company accounts for its stock-based compensation awards to employees, including grants of employee stock options, to be recognized in the statements of operations based on their grant date fair values. The Company estimates the grant date fair value of each option award using the Black-Scholes option-pricing model. The use of the Black-Scholes option-pricing model requires management to make assumptions with respect to the expected term of the option, the expected volatility of the common stock consistent with the expected life of the option, risk-free interest rates and expected dividend yields of the common stock. The Company recognizes stock-based compensation expense, equal to the grant date fair value of stock options over the requisite service period.

Preferred Stock

The Company's Series A, B and C Convertible Preferred Stock (collectively known as "Preferred Stock") allowed the holders to require the company to redeem their shares after achievement of specified certain milestones. Certain of the redemption features were outside the Company's control, and as a result, the Preferred Stock were reflected in the balance sheet as mezzanine equity.

Warrants

In conjunction with certain financing transactions, the Company issued warrants to purchase the Company's common stock. The Company determines whether the warrants should be classified as a liability or equity. For warrants classified as liabilities, the Company estimates the fair value of the warrants at each reporting period using Level 3 inputs. The estimates in valuation models are based, in part, on subjective assumptions, including but not limited to stock price volatility, the expected life of the warrants, the risk-free interest rate and the fair value of the common stock underlying the warrants, and could differ materially in the future. The Company will continue to adjust the fair value of the warrant liability at the end of each reporting period for changes in fair value from the prior period until the earlier of the exercise or expiration of the applicable warrant.

For warrants classified as equity, the Company records the value of the warrants in additional paid-in capital on the balance sheet. The Company will continue to evaluate the classification of the warrants on a quarterly basis, to determine whether the warrants continue to meet equity classification requirement.

Research and Development Costs

Research and development expenses consist of costs such as salaries and benefits, laboratory supplies, facility costs, consulting fees and fees paid to contract research organizations, clinical trial sites, laboratories, other clinical service providers and contract manufacturing organizations. Research and development costs are expensed as incurred.

In-process Research & Development

In-process research and development, or IPR&D, represents the fair value assigned to acquired research and development assets that were not fully developed as of the completion of the Merger. IPR&D acquired in a business combination is capitalized on the Company's balance sheet at its acquisition-date fair value. Until the project is completed, the asset is accounted for as an indefinite-lived intangible asset subject to impairment testing. Upon completion of a project, the carrying value of the related IPR&D is reclassified to intangible assets and is amortized over the estimated useful life of the asset. The Company evaluates the potential impairment of its intangible assets if events or changes in circumstances indicate that the carrying amount of the asset may not be fully recoverable.

Comprehensive loss

Comprehensive loss is comprised of the Company's net loss and other comprehensive income (loss). Unrealized gain (loss) on available-for-sale marketable securities represents the only component of other comprehensive income (loss).

Clinical Trial Accruals

The Company's preclinical and clinical trials are performed by third party contract research organizations (CROs) and/or clinical investigators, and clinical supplies are manufactured by contract manufacturing organizations (CMOs). Invoicing from these third parties may be monthly based upon services performed or based upon milestones achieved. The Company accrues these expenses based upon its assessment of the status of each clinical trial and the work completed, and upon information obtained from the CROs and CMOs. The Company's estimates are dependent upon the timeliness and accuracy of data provided by the CROs and CMOs regarding the status and cost of the studies, and may not match the actual services performed by the organizations. This could result in adjustments to the Company's research and development expenses in future periods. To date the Company has had no significant adjustments.

Bonus Accruals

The Company has bonus programs for eligible employees. Bonuses are determined based on various criteria, including the achievement of corporate, departmental and individual goals. Bonus accruals are estimated based on various factors, including target bonus percentages per level of employee and probability of achieving the goals upon which bonuses are based. The Company's management periodically reviews the progress made towards the goals under the bonus programs. As bonus accruals are dependent upon management's judgments of the likelihood of achieving the various goals, it is possible for bonus expense to vary significantly in future periods if changes occur in those management estimates.

Segments

The Company has one reportable segment and uses one measurement of results of operations to manage its business. All long-lived assets are maintained in the United States of America.

Recently Issued Accounting Pronouncements

In November 2015, the Financial Accounting Standards Board (FASB) issued an accounting standard update for the presentation of deferred income taxes. Under this new guidance, deferred tax liabilities and assets should be classified as noncurrent in a classified balance sheet. The update is effective for the Company beginning in the first quarter of fiscal year 2017 with early adoption permitted as of the beginning of an interim or annual reporting period. Additionally, this guidance may be applied either prospectively or retrospectively to all periods presented. We adopted the standard in the first quarter of 2017 and it did not have a material impact to our consolidated financial statements.

In May 2014, the FASB issued a new accounting standard that amends the guidance for the recognition of revenue from contracts with customers to transfer goods and services. The FASB has subsequently issued additional, clarifying standards to address issues arising from implementation of the new revenue recognition standard. The new revenue recognition standard and clarifying standards are effective for interim and annual periods beginning on January 1, 2018. We will adopt the standard using the modified-

retrospective approach beginning in 2018. We have completed our assessment of the impact and we do not expect a material impact to total revenue in our consolidated statement of operation and comprehensive loss. We do expect additional disclosures upon the adoption of the standard.

In March 2016, the FASB issued an accounting standard update regarding Improvements to Employee – Share Based Payment Accounting that simplifies several aspects of the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. The Company adopted the standard effective January 1, 2017 and the adoption did not have a material effect on its consolidated financial statements.

In February 2016, the FASB issued a new accounting standard that amends the guidance for the accounting and disclosure of leases. This new standard requires that lessees recognize the assets and liabilities that arise from leases on the balance sheet, including leases classified as operating leases under current GAAP, and disclose qualitative and quantitative information about leasing arrangements. The new standard requires a modified-retrospective approach to adoption and is effective for interim and annual periods beginning on January 1, 2019. The Company is in the process of evaluating the impact the adoption of this standard would have on its financial statements and disclosures.

In May 2017, the FASB issued a new accounting standard update on stock compensation and the scope of modification accounting to clarify when to account for a change to the terms or conditions of a share-based payment award as a modification. Under this new guidance, modification accounting is required if the fair value, vesting conditions, or classification of the award changes as a result of the change in terms or conditions. The standard is effective for annual reporting periods beginning after December 15, 2017, including interim reporting periods within each annual reporting period. The Company does not expect the adoption of this guidance to have a material impact on its financial statements or disclosures.

NOTE 2—NET INCOME (LOSS) PER COMMON SHARE

Basic net loss per common share is computed by dividing net loss by the weighted-average number of common shares outstanding during the period. Diluted net loss per share is computed by giving effect to all potential dilutive common shares, including outstanding options and warrants. The following is the calculation of basic and diluted net loss per share (in thousands, except share and per share data):

	Years Ended December 31,	
	2017	2016
Numerator:		
Net loss attributable to common shareholders	$ (24,098)	$ (12,600)
Denominator:		
Weighted-average number of common shares outstanding - basic and diluted	11,400,881	213,420
Net loss per share:		
Basic and diluted	$ (2.11)	$ (59.04)

In August 2017, in conjunction with the Merger, all of the Private Molecular common stock was exchanged for the Company's Common Stock at an exchange ratio of 7.7844, before giving effect to the 11:1 reverse stock splitas a result of the Merger. Share amounts in the table above reflect this conversion.

The following outstanding warrants and options were split adjusted, and excluded from the computation of diluted net loss per share for the periods presented because including them would have had an antidilutive effect (in thousands):

	Years Ended December 31,	
	2017	2016
Shares issuable upon exercise of warrants	3,332	35
Shares issuable upon exercise of stock options	2,769	942

NOTE 3— MERGER WITH PRIVATE MOLECULAR

On August 1, 2017, the Company, formerly known as Threshold, completed its business combination with Private Molecular, in accordance with the terms of the Merger Agreement, dated as of March 16, 2017, by and among Threshold, the Merger Sub, a wholly owned subsidiary of Threshold, and Private Molecular, pursuant to which Merger Sub merged with and into Private Molecular, with

Private Molecular, surviving as a wholly-owned subsidiary of Threshold (the "Merger"). Immediately upon completion of the Merger, theformer stockholders of Private Molecular stockholders held a majority of the voting interest of the combined company.

Also on August 1, 2017, in connection with, and prior to the completion of, the Merger, Threshold effected an 11-for-1 reverse stock split of its common stock (the "Reverse Stock Split") and changed its name from Threshold Pharmaceuticals, Inc. to Molecular Templates, Inc. Under the terms of the Merger, at the effective time of the Merger, the Company issued shares of its common stock to Private Molecular stockholders, at an exchange ratio of 7.7844 shares of common stock (the "Exchange Ratio"), before taking into account the Reverse Stock Split, in exchange for each share of Private Molecular common stock outstanding immediately prior to the Merger. Immediately following the closing of the Merger on August 1, 2017, the former Threshold stockholders owned approximately 34.4% of the aggregate number of shares of common stock of the Company and the former Private Molecular stockholders owned approximately 65.6% of the shares of common stock of the Company, subject to adjustments in accordance with the merger agreement.

All Private Molecular stock options granted under the 2009 Stock Plan (the "2009 Plan") (whether or not then exercisable) outstanding prior to the effective time of the Merger were exchanged for options to purchase the Company's common stock. All outstanding and unexercised Private Molecular stock options assumed by the Company may be exercised solely for shares of the Company's common stock. The number of shares of the Company's common stock subject to each Private Molecular stock option assumed by the Company was determined by multiplying (a) the number of shares of Private Molecular common stock that were subject to such Private Molecular stock option, as in effect immediately prior to the effective time of the merger by (b) the Exchange Ratio, then dividing by 11 (to account for the Reverse Stock Split); rounding the resulting number down to the nearest whole number of shares of the Company's common stock. The per share exercise price for the Company's common stock issuable upon exercise of each Private Molecular stock option assumed by the Company shall be determined by dividing (a) the per share exercise price of Private Molecular common stock subject to such Private Molecular stock option, as in effect immediately prior to the effective time of the merger, by (b) the Exchange Ratio, then multiplying by 11 (to account for the Reverse Stock Split); rounding the resulting exercise price up to the nearest whole cent. The exchange of the Private Molecular stock options for the Company's stock options was treated as a modification of the awards.

Threshold equity awards issued and outstanding at the time of the Merger remain issued and outstanding. However, for accounting purposes, Threshold equity awards are assumed to have been exchanged for equity awards of Private Molecular, the accounting acquirer. As of August 1, 2017, Threshold had outstanding stock options to purchase 963,681 shares of common stock, of which all were vested and exercisable at a weighted average exercise price of $33.62 per share, after giving effect to the Reverse Stock Split. As all assumed options were fully vested at time of merger, no further stock based compensation expense will be recognized.

Allocation of Purchase Consideration

Pursuant to business combination accounting, the Company applied the acquisition method, which requires the assets acquired and liabilities assumed be recorded at fair value with limited exceptions.

The purchase price for Threshold on August 1, 2017, the closing date of the Merger, was as follows (in thousands, except per share amounts):

	August 1, 2017	
Number of share of the combined company owned by Threshold stockholders	6,508	(1)
Multiplied by the price per share of Threshold common stock	$ 5.94	(2)
Purchase price before options	$ 38,658	
Threshold options assumed	1,006	(3)
Settlement of preexisting bridge note with Threshold	(4,010)	(4)
Total purchase price	$ 35,654	

1. Represents the number of shares of common stock of the combined company that Threshold stockholders owned as of the closing of the Merger pursuant to the Merger Agreement. This amount is calculated as 6,508,356 shares from Threshold common stock outstanding as of August 1, 2017, adjusted for the 11-for-1 reverse stock split.
2. The fair value of Threshold common stock used in determining the purchase price was $5.94, which was derived from the $0.54 per share closing price of Threshold on August 1, 2017, the current price at the time of closing, adjusted for the 11-for-1 reverse stock split.
3. Because Private Molecular is considered to be the acquirer for accounting purposes, the pre-Merger vested stock options granted by Threshold under the 2014 Equity Incentive Plan are deemed to have been exchanged for equity awards of the Company and

as such the portion of the acquisition date fair value of these equity awards attributable to pre-Merger service to Threshold were accounted for as a component of the consideration transferred.

4. Represent the bridge loan at the date of merger between Threshold and Molecular. Since the receivable on Threshold's balance sheet was settled as part of the merger, it is deemed to be a reduction in the purchase price.

Under the acquisition method of accounting, the total purchase price was allocated to tangible and identifiable intangible assets acquired and liabilities assumed of Threshold on the basis of their estimated fair values as of the transaction closing date on August 1, 2017.

The following table summarizes the allocation of the purchase consideration to the assets acquired and liabilities assumed based on their fair values as of August 1, 2017 (in thousands):

	August 1, 2017
Cash and cash equivalents	$ 11,216
Prepaid expenses and other current assets	945
In-process research and development (IPR&D)	26,623
Accounts payable, accrued expenses	(2,009)
Warrant liability	(1,121)
Net assets acquired	$ 35,654

The Company believes that the historical values of Threshold's current assets and current liabilities approximate fair value based on the short-term nature of such items. The final allocation of the purchase price is dependent on the finalization of the valuation of the fair value of assets acquired and liabilities assumed and may differ from the amounts included in these financial statements. The Company expects to complete the final allocation as soon as practical but no later than one year from the acquisition date.

Correction of purchase price and allocation of purchase price

During the three months ended December 31, 2017, the Company corrected the purchase price as well as the allocation of the purchase price. In the September 30, 2017 financial statements, the Company originally recorded the settlement of the $4.0 million Threshold bridge loan as a reduction in additional paid-in capital and increase in goodwill. This correction resulted in the elimination of previously recorded goodwill and a reduction in IPR&D of $677,000. The tables above reflect this correction.

In Process Research and Development

The Company used the risk adjusted discounted cash flow method to value the in-process research and development intangible asset. Under the valuation method, the present value of future cash flows expected to be generated from the in-process research and development of the acquired product candidate, evofosfamide, was determined using a discount rate of 12%, and identified projected cash flows from evofosfamide were risk adjusted to take into consideration the probabilities of moving through the various clinical stages.

Transaction Costs

Transaction costs associated with the Merger of approximately $2.0 million are included in general and administrative expense.

Threshold Promissory Note

On March 24, 2017, the Company received $2.0 million from Threshold in the form of a promissory note at an interest rate of 1% per annum. The Company received an additional $2.0 million on June 1, 2017. The note was settled as part of the Merger as a reduction to purchase consideration.

Share Based Awards

The exchange of Private Molecular stock options to purchase Threshold common stock, as renamed Molecular, was accounted for as a modification of the awards because the legal exchange of the awards is considered a modification of Private Molecular stock options. The modification of the stock options did not result in any incremental compensation expense as the modification did not increase the fair value of the stock options. Options to purchase 963,681 shares of common stock were assumed as a result of the merger. As all assumed options were vested at the time of the merger, no additional stock based compensation will be recognized related to these assumed options.

Additionally, pursuant to the terms of the Merger Agreement, participants in the 2014 Equity Incentive Plan received accelerated vesting for all or a portion of their pre-merger awards as well as a modification of the exercise period. The Company recorded $1.2 million in stock compensation associated with the transaction. See Note B, Equity Incentive Plans and Stock Based Compensation, for further details about stock based compensation recorded.

Pro Forma Results in connection with the Merger

The Company's operating results include $320,000 of operating expenses attributable to the former Threshold business activities for the period of August 1, 2017 to December 31, 2017.

The unaudited financial information in the following table summarizes the combined results of operations of the Company and Threshold, on a pro forma basis, as if the Merger occurred at the beginning of the periods presented (in thousands, except per share data).

	Unaudited Years ended December 31,	
	2017	2016
Revenue	$ 6,395	$ 1,880
Net loss	$ (15,599)	$ (35,008)

The above unaudited pro forma information was determined based on historical GAAP results of Molecular and Threshold. The unaudited pro forma combined results do not necessarily reflect what the Company's combined results of operations would have been, if the acquisition was completed on January 1, 2016. The unaudited pro forma combined net loss includes pro forma adjustments primarily related to the following non-recurring items directly attributable to the business combinations:

- Elimination of combined transaction costs of $5.4 million for the year ended December 31, 2017. No such costs were incurred in 2016.
- Elimination of the loss on conversion of notes of $4.6 million for the year ended December 31, 2017. No such loss was incurred in 2016.
- Elimination of stock-based compensation expenses of $1.2 million related to the acceleration of vesting and modification of post-termination exercise periods of Threshold stock options awards in connection with the Merger for the year ended December 31, 2017. No such costs were incurred in 2016.
- Elimination of severance payments of $2.9 million related to former Threshold executives, in connection with the Merger for the year ended December 31, 2017. No such costs were incurred in 2016.
- Elimination of interest expense of $0.3 million and $0.2 million for the years ended December 31, 2017 and 2016, respectively, related to the Threshold bridge loan to Private Molecular that was paid down with the Merger.
- Elimination of the change in the fair value of the Threshold warrant liabilities of $0.1 million and $0.1 million of loss for the years ended December 31, 2017 and 2016, respectively.

NOTE 4 — RESEARCH AND DEVELOPMENT AGREEMENTS

Related Party Collaboration Agreements - Takeda Pharmaceuticals, Inc.

Takeda Collaboration Agreement

In October 2016, Private Molecular entered into a collaboration and option agreement (the "Takeda Collaboration Agreement") with Millennium Pharmaceuticals, Inc., a wholly owned subsidiary of Takeda, to discover and develop CD38-targeting engineered toxin bodies ("ETBs"), which includes MT-4019 for evaluation by Takeda. Under the terms of the Takeda Collaboration Agreement, Molecular is responsible for providing to Takeda (i) new ETBs generated using Takeda's proprietary fully human antibodies targeting CD38 and (ii) MT-4019 for in vitro and in vivo pharmacological and anti-tumor efficacy evaluations. Molecular granted Takeda (1) a background IP license during the term of the Takeda Collaboration Agreement, and (2) an exclusive option during the term of the Takeda Collaboration Agreement and for a period of thirty days thereafter, to negotiate and obtain an exclusive worldwide license to develop and commercialize any ETB that may result from this collaboration, including MT-4019.

Molecular received an upfront payment of $2.0 million in technology access fees and cost reimbursement associated with the Company's performance and completion of the Company's obligations under the agreement.

The Company determined that the deliverables under the Takeda Collaboration Agreement were the background IP license, as well as the research and development services. The option to license ETBs is a substantive option, and not deemed a deliverable. The Company determined that there was one unit of accounting, since the background IP license did not have standalone value. Revenues are recognized over the period that the research and development services occur using the proportional performance model.

During the year ended December 31, 2017, the Company recorded collaboration revenue from Takeda of $1.9 million under the Takeda Collaboration Agreement. During the year ended December 31, 2016, the Company recorded no collaboration revenue from Takeda since no services were performed under the contract.

Takeda Multi-Target Agreement

In June 2017, Molecular entered into a Multi-Target Collaboration and License Agreement with Takeda ("Takeda Multi-Target Agreement") in which Molecular will collaborate with Takeda to identify and generate ETBs, against two targets designated by Takeda. Takeda will designate certain targets of interest as the focus of the research. Each party grants to the other nonexclusive rights in its intellectual property for purposes of the conduct of the research, and Molecular agrees to work exclusively with Takeda with respect to the designated targets.

Under the Takeda Multi-Target Agreement, Takeda has an option during an option period to obtain an exclusive license under Molecular's intellectual property to develop, manufacture, commercialize and otherwise exploit ETBs against the designated targets. The option period for each target ends three months after the completion of the evaluation of such designated target.

Molecular received an upfront fee of $1.0 million and is entitled to receive an additional $2 million upon the designation of each of the two targets. Molecular may also receive an additional $25.0 million, in aggregate through the exercise of the option to license ETBs. Additionally, Molecular is entitled to receive up to approximately $547.0 million in additional milestone payments through preclinical and clinical development and commercialization. Molecular is also entitled to tiered royalty payments of a mid-single to low-double digit percentage of net sales of any licensed ETBs, subject to certain reductions.

The Takeda Multi-Target Agreement will expire on the expiration of the option period (within three months after the completion of the evaluation of each designated target) for the designated targets if Takeda does not exercise its options, or, following exercise of the option, on the later of the expiration of patent rights claiming the licensed ETB or ten years from first commercial sale of a licensed ETB. Takeda Multi-Target Agreement may be sooner terminated by Takeda for convenience or upon a Molecular change of control, or by either party for an uncured material breach of the agreement.

The Company determined that the deliverables under the Takeda Multi-Target Agreement were the background IP license, the research and development services, and manufacturing know-how. The option to license ETBs is a substantive option, considered to be at fair value, and not deemed a deliverable. The Company determined that there was one unit of accounting, since the background IP license, and the manufacturing know-how did not have standalone value. Revenues are recognized over the period that the research and development services occur using the proportional performance model.

In connection with the execution of the Takeda Multi-Target Agreement. Takeda also entered into a stock purchase agreement with the Company ("Takeda Stock Purchase Agreement"), pursuant to which Takeda purchased approximately $20.0 million of shares of the Company's common stock following the reverse-merger in the third quarter of 2017. See Note 12. Stockholders' Equity, for further details. Since the Takeda Stock Purchase Agreement was contingent, it was not a deliverable under the Takeda Multi-Target Agreement.

During the year ended December 31, 2017 the Company recorded no collaboration revenue under the Multi-Target Takeda Agreement, since no services had been performed under the project.

Other Collaboration Agreements

In September 2016, Private Molecular entered into a collaboration agreement an undisclosed pharmaceutical company ("Other Collaboration Agreement"), to generate engineered toxin bodies ("ETBs"), for evaluation. Under the terms of the Other Collaboration Agreement, Molecular is responsible for providing to the customer (i) new ETB generated using the customer's materials and (ii) ETB study molecules for testing and evaluation. Molecular granted the customer a background IP license during the term of the AbbVie Agreement. This work was completed and accepted in March 2017, and $500,000 was recognized as revenue during the three months ended March 31, 2017.

The customer also received an option under the Other Collaboration Agreement for the manufacture of additional quantities of ETB molecules, which they exercised in November 2017. Molecular stands to receive an additional $250,000 under the Other Collaboration Agreement, upon delivery and acceptance of the additional quantities of ETB materials.

Grant Agreements

The Company receives funds from a state grant funding program, which is a conditional cost reimbursement grant and revenue is recognized as allowable costs are paid. In November 2011, Private Molecular was awarded a $10.6 million product development grant from CPRIT for its CD20-targeting ETB MT-3724. To date, Molecular has received $9.5 million in grant funds. The Company recognized approximately $1.0 million and $1.9 million in grant revenue under these awards during the years ended December 31, 2017 and 2016, respectively. Amounts collected in excess of revenue recognized are recorded as deferred revenue.

NOTE 5—MARKETABLE SECURITIES AND FAIR VALUE

The Company accounts for its marketable securities in accordance with ASC 820*"Fair Value Measurements and Disclosures."* ASC 820 defines fair value, establishes a framework for measuring fair value in GAAP, and expands disclosures about fair value measurements. ASC 820 defines fair value as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. ASC 820 also establishes a fair value hierarchy which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The standard describes three levels of inputs that may be used to measure fair value:

Level 1—Quoted prices in active markets for identical assets or liabilities.

Level 2—Observable inputs other than Level 1 prices such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3—Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The Company utilizes the market approach to measure fair value for its financial assets and liabilities. The market approach uses prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. For Level 2 securities that have market prices from multiples sources, a "consensus price" or a weighted average price for each of these securities can be derived from a distribution-curve-based algorithm which includes market prices obtained from a variety of industrial standard data providers (e.g. Bloomberg), security master files from large financial institutions, and other third-party sources. Level 2 securities with short maturities and infrequent secondary market trades are typically priced using mathematical calculations adjusted for observable inputs when available.

The following table sets forth the Company's financial assets (cash equivalents and available-for-sale marketable securities) at fair value on a recurring basis as of December 31, 2017 and 2016:

(in thousands)	Fair Value as of December 31, 2017	Basis of Fair Value Measurements		
		Level 1	Level 2	Level 3
Money market funds	$ 51,751	$ 51,751	$ —	$ —

(in thousands)	Fair Value as of December 31, 2016	Basis of Fair Value Measurements		
		Level 1	Level 2	Level 3
Money market funds	$ 796	$ 796	$ —	$ —

Refer to Note 12 – Stockholder's Equity for a table that sets forth the Company's financial liabilities at fair value on a recurring basis as of December 31, 2017 and 2016. The Company determined the fair value of the liability associated with its 2017 Warrants to purchase in aggregate 377,273 shares of outstanding common stock using a Black-Scholes Model.

The Company invests in highly-liquid, investment-grade securities. The following is a summary of the Company's available-for-sale securities at December 31, 2017 and 2016:

As of December 31, 2017 (in thousands):	Cost Basis	Unrealized Gain	Unrealized Loss	Fair Value
Money market funds	$ 51,751	$ —	$ —	$ 51,751
Less cash equivalents	(51,751)	—	—	(51,751)
Total marketable securities	$ —	$ —	$ —	$ —

As of December 31, 2016 (in thousands):	Cost Basis	Unrealized Gain	Unrealized Loss	Fair Value
Money market funds	$ 796	$ —	$ —	$ 796
Less cash equivalents	(796)	—	—	(796)
Total marketable securities	$ —	$ —	$ —	$ —

There were no realized gains or losses in years ending December 31, 2017 and 2016 .

As of December 31, 2017 and 2016, the fair value of the long-term debt, payable in installments through year ended 2019, approximated its carrying value of $3.5 million and $5.6 million, respectively, because it is carried at a market observable interest rate, which are considered Level 2.

NOTE 6—PROPERTY AND EQUIPMENT

Property and equipment comprise the following (in thousands):

	December 31,	
	2017	2016
Laboratory equipment	$ 1,691	$ 488
Leasehold improvements	512	48
Furniture and fixtures	85	32
Computer and equipment	76	35
	2,364	603
Less: Accumulated depreciation	(412)	(269)
Total property and equipment, net	$ 1,952	$ 334

Depreciation expense was $155,000 and $65,000 for the years ended December 31, 2017 and 2016, respectively.

NOTE 7—BALANCE SHEET COMPONENTS

Accrued liabilities comprise the following (in thousands):

	December 31,	
	2017	2016
Accrued liabilities:		
General and administrative	$ 374	$ 26
Clinical costs	702	409
Non-clinical research	435	2
Bridge note interest	—	201
Payroll related	1,149	553
Other accrued expenses	30	19
Total accrued liabilities	$ 2,690	$ 1,210

Deferred revenue was comprised of the following:

	December 31,	
	2017	2016
Deferred revenue		
Grant agreements	$ 1,673	$ 620
Collaboration agreements	1,092	1,250
Total deferred revenue	$ 2,765	$ 1,870

NOTE 8 — RELATED PARTY TRANSACTIONS

Convertible Notes

As of August 1, 2017 and December 31, 2016, the Company had received an aggregate of approximately $10.0 million and $7.3 million, respectively, from stockholders under secured convertible promissory notes (the "Notes"). All of the Notes issued in 2017 and 2016 had the same terms. The Notes were subordinate to the long-term debt due to Silicon Valley Bank (See Note 9. Borrowing Arrangements) and accrue interest at a rate of 5.0% per annum, which was due with all unpaid principal on the maturity date of September 7, 2017. In connection with the Merger, the holders of the Notes agreed to convert the Notes based on an agreed upon price of $3.36 per share and no Notes remain outstanding at December 31, 2017. The principle of $10.0 million and accrued interest $486,900 was converted to 3,121,098 shares, which converted to 2,208,716 post-split shares in the merged entity. As a result, the Company recorded a loss on conversion of notes of $4.6 million during the year ended December 31, 2017, since the agreed upon price was below the fair value of the Notes at the time of the Merger.

Takeda Collaboration and Stock Purchase

In connection with the Takeda Stock Purchase Agreement described in Note 4. Research and Development Collaboration Agreements, Takeda became a related party, following the stock purchase. Refer to Note 4. Research and Development Collaboration Agreements for more details about the Takeda Collaboration Agreement and the Takeda Multi-Target Agreement. Refer to Note 12. Stockholders' Equity, for more detail about the Takeda Stock Purchase Agreement. Michael Broxson, a director of the Company is the Vice President and Head of R&D Business Development for Takeda.

Concurrent Financing

Following the Concurrent Financing described in Note 12 below, Longitude Venture Partner III, L.P. ("Longitude") and CDK Associates, L.L.C. ("CDK") became related parties, with Longitude and CDK beneficially owning 15.3% and 5.55% of the Company, respectively, following investments of $20.0 million and $7.0 million, respectively. Scott Morenstein, a director of the Company is a Managing Director of Caxton Alternative Management LP, the investment manager of CDK. David Hirsch, a director of the Company, is a member of Longitude Capital Partners III, LLC, the general partner of Longitude. Furthermore, Kevin Lalande, a director of the Company is affiliated with Sante Health Ventures I, L.P. and Sante Heath Ventures Annex Fund, L.P., which are stockholders of the Company and were investors in the Concurrent Financing. Finally, Excel Venture Fund II, L.P., a stockholder of the Company beneficially owning greater than 5% of the Company invested approximately $333,000 in the Concurrent Financing.

Threshold Promissory Note

The Company received $4.0 million in the aggregate from Threshold during 2017 in the form on a promissory note that was settled as part of the Merger. Refer to Note 3. Merger with Private Molecular, for more details about the Threshold promissory note.

NOTE 9 — BORROWING ARRANGEMENTS

In April 2014, the Company entered into a loan and security agreement with Silicon Valley Bank ("SVB") that was subsequently amended in April 2015, to provide for (1) Growth Capital Advances to the Company of up to $6.0 million over three tranches based on corporate milestones (2) term loans of up to $6.0 million in the aggregate ("Growth Capital Loan"); (3) warrants to purchase 14,254 shares of the Company's common stock at an exercise price of $3.07 per share under the amended loan and security agreement; and (4) a final fee of $345,000 due at the loan maturity date in addition to the principal and interest payments.

The Company drew down $0.8 million and $2.3 million in May and June 2015 and issued warrants to purchase 17,310 shares of the Company's common stock at an exercise price of $3.07 per share under the second and amended loan and security agreement. The Company drew down $3.0 million in April 2016 and issued warrants to purchase 17,310 shares of the Company's common stock at an

exercise price of $3.07 per share under the second term loan. The warrants issued in the Loan Agreement became exercisable upon issuance, and were converted into common stock upon the closing of the Merger.

As of December 31, 2017, the Company has received $6 million in the aggregate from this loan and security agreement. The Company is required to repay the outstanding principal in 30 equal installments beginning November 1, 2016 and is due in full on April 30, 2019. Interest accrues at a rate of 1.19% above prime, or 5.44% per annum as of December 31, 2017. Interest only payments were made monthly and beginning November 1, 2016, the Company paid the first of thirty consecutive equal monthly payments of principal plus interest.

The Company paid approximately $2.4 million in principal and $237,000 in interest during the year ended December 31, 2017 and $400,000 in principal and $220,000 in interest during the year ended December 31, 2016. The final fee of $345,000 is being accreted to interest expense over the life of the loan using the effective interest method. The Growth Capital Loan matures on April 30, 2019 and is secured by substantially all assets of the Company. The Company does not have any financial loan covenants related to the Growth Capital Loan.

As of December 31, 2017 and 2016, the Growth Capital Loan balance was $3.5 million and $5.6 million, respectively. As of December 31, 2017 and 2016, the Company was in compliance with the non-financial covenants of the Growth Capital Loan.

Subsequent to December 31, 2017, the Company entered into a term loan facility with Perceptive Credit Holdings II, LP. The Company intends to use the proceeds to pay off the existing arrangement with SVB. Refer to Note 16 – Subsequent events.

Future required principal payments on the Growth Capital Loan were as follows as of December 31, 2017 (in thousands):

Year Ending December 31,		
2018	$	2,400
2019		1,145
Total		3,545
Debt discount and deferred finance costs		(67)
Total	$	3,478

NOTE 10—COMMITMENTS AND CONTINGENCIES

Commitments

The Company is obligated under operating lease agreements covering the Company's office facilities in Austin, Texas and Jersey City, New Jersey, respectively. Facilities expense under the operating leases was approximately $625,000 and $288,000 thousand for the years ended December 31, 2017 and 2016, respectively.

Future minimum payments due under the operating lease agreements at December 31, 2017 were as follows (in thousands):

Year Ending December 31,		
2018	$	1,003
2019		1,135
2020		1,048
2021		1,074
2022		1,096
Thereafter		486
Total	$	5,842

The Company leases laboratory equipment under non-cancelable capital lease agreements. As ofDecember 31, 2017 and 2016, laboratory equipment under capital leases included in property and equipment totaled approximately $162,000 and $136,000, respectively, net of accumulated amortization of approximately $75,000 and $44,000, respectively. Future minimum capital lease payments consisted of the following at December 31, 2017 (in thousands):

Year Ending December 31,	
2018	$ 55
2019	33
2020	19
Total future minimum capital lease payments	107
Less amount representing interest	(8)
Total capital lease obligations	99
Current portion of lease obligations	(50)
Capital lease obligations, non-current portion	$ 49

Contingencies

In the ordinary course of business, the Company may provide indemnifications of varying scope and terms to vendors, lessors, business partners and other parties with respect to certain matters, including, but not limited to, losses arising out of the Company's breach of such agreements, services to be provided by or on behalf of the Company, or from intellectual property infringement claims made by third parties. In addition, the Company has entered into indemnification agreements with its directors and certain of its officers and employees that will require the Company, among other things, to indemnify them against certain liabilities that may arise by reason of their status or service as directors, officers or employees. The Company maintains director and officer insurance, which may cover certain liabilities arising from its obligation to indemnify its directors and certain of its officers and employees, and former officers and directors in certain circumstances. The Company maintains product liability insurance and comprehensive general liability insurance, which may cover certain liabilities arising from its indemnification obligations. It is not possible to determine the maximum potential amount of exposure under these indemnification obligations due to the limited history of prior indemnification claims and the unique facts and circumstances involved in each particular indemnification obligation. Such indemnification obligations may not be subject to maximum loss clauses. Management is not currently aware of any matters that could have a material adverse effect on the financial position, results of operations or cash flows of the Company.

NOTE 11 — REDEEMABLE CONVERTIBLE PREFERRED STOCK

The following is a summary of the Company's redeemable convertible preferred stock at December 31, 2017 and 2016 (collectively, the "Preferred Stock") (in thousands):

				Shares Issued and Outstanding	
	Par Value		Shares Authorized	December 31, 2017	December 31, 2016
Series A Preferred Stock	$	0.001	2,500	—	2,500
Series B Preferred Stock	$	0.001	2,273	—	2,273
Series C Preferred Stock	$	0.001	4,392	—	4,343
Total			9,165	—	9,116

On August 1, 2017, the Company's preferred stock was converted to common shares as a result of the Merger. The outstanding 9,116,405 shares of preferred stock, along with preferred dividends converted to 3,912,892, were converted to 13,029,297 shares of common stock. These common shares were converted upon merger to 9,220,478 shares of the merged entity. Refer to Footnote 3: Merger with Private Molecular, for further details on the Merger.

The following table presents changes in the preferred stock during the years ended December 31, 2017 and 2016 (in thousands)

	Series A Preferred	Series B Preferred	Series C Preferred	Total
Balance at December 31, 2015	$ 3,689	$ 5,174	$ 15,436	$ 24,299
Deemed dividends on preferred stock	200	306	1,066	1,572
Balance at December 31, 2016	$ 3,889	$ 5,480	$ 16,502	$ 25,871
Deemed dividends on preferred stock	119	178	661	958
Conversion to common stock in merger	(4,008)	(5,658)	(17,163)	(26,829)
Balance at December 31, 2017	$ —	$ —	$ —	$ —

NOTE 12—STOCKHOLDERS' EQUITY

Equity Financings and Related Warrants

Concurrent Financing

On August 1, 2017, the Company entered into the a securities purchase agreement with Longitude and certain other accredited investors (the "Longitude Securities Purchase Agreement"), pursuant to which the Company sold an aggregate of 5,793,063 units (the "Units") having an aggregate purchase price of $40.0 million ("PIPE Financing"), each such Unit consisting of (i) one (1) share (the "Shares") of our common stock and (ii) a warrant (the "Warrants") to purchase 0.5 shares of our common stock (the "Private Placement"). The Private Placement was pursuant to equity commitment letter agreements entered into by and between the Company and investors in March and June 2017. The purchase price per Unit was $6.9048. The Warrants will be exercisable for a period of seven years from the date of their issuance at a per-share exercise price of $6.8423 (which exercise price shall be payable in cash or through a cashless exercise mechanic), subject to certain adjustments as specified in the Warrants. At December 31, 2017, there were warrants outstanding under this agreement to purchase 2,896,532 share of common stock. The warrants met the requirements for equity classification under ASC 815: Derivatives and Hedging, and the value of these warrants is included in additional paid-in capital on the balance sheet. The warrants are exercisable upon issuance and expire August 1, 2024. The Company will continue to evaluate equity classification on a quarterly basis.

In December 2015, the Company entered into an agreement with Wedbush ("Wedbush Agreement"), which was subsequently amended in December of 2017, related to investment banking services. As part of the Wedbush Agreement, the Company issued warrants to purchase 57,930 shares of our common stock. The Warrants will be exercisable for a period of seven years from the date of their issuance at a per-share exercise price of $6.8423 (which exercise price shall be payable in cash or through a cashless exercise mechanic), subject to certain adjustments as specified in the Warrants. The warrants met the requirements for equity classification under ASC 815: Derivatives and Hedging, and the value of these warrants is included in additional paid-in capital on the balance sheet. The warrants are exercisable upon issuance and expire December 1, 2024. The Company will continue to evaluate equity classification on a quarterly basis.

Subsequent Financing

In connection with the execution of the Takeda Multi-Target Agreement, Threshold and Private Molecular entered into the Takeda Stock Purchase Agreement ("Concurrent Financing"). Pursuant to the Takeda Stock Purchase Agreement, following the consummation of the Merger and Private Placement, Takeda purchased 2,922,993 shares of the Company common stock, at a price per share of $6.8423, for an aggregate purchase price of $20 million.

Common Stock Warrant Liability Valuation

The Company accounts for certain of its common stock warrants as liabilities under guidance in ASC 480 that clarifies the determination of whether an instrument is classified as a liability or equity.

In 2014, 2015 and 2016, the Company issued to SVB warrants to purchase 14,254, 17,310, and 17,310 shares of our common stock, respectively, as part of the SVB loan and securities agreement, with an exercise price of $3.07 per share. Refer to Note 9: Borrowing Arrangements, for further detail about the SVP loan. The SVB warrants were converted into common stock as part of the Merger. Refer to Note 3: Merger with Private Molecular, for further detail about the Merger.

On August 1, 2017, as part of the Merger, the Company assumed the warrant liability of the predecessor Threshold, related to issued warrants to purchase 377,273 shares of our common stock, with an exercise price of $39.82 per share. Refer to Note 3: Merger with Private Molecular, for further detail about the Merger.

Due to change in control provisions outside of the Company's control in these warrant agreements, the guidance requires the Company's outstanding warrants to be classified as liabilities and to be fair valued at each reporting period, with the changes in fair value recognized as other income (expense) in the Company's consolidated statements of operations.

The following table is a reconciliation of the warrant liability measured at fair value using level 3 inputs (in thousands):

	Warrant Liability
Balance at December 31, 2015	34
Initial fair value of common stock warrants	18
Change in fair value of common stock warrants during 2016	(3)
Balance at December 31, 2016	49
Change in fair value through August 1, 2017	37
Conversion of 2014 warrants to common stock	(87)
Warrant liability related to Merger on August 1, 2017	1,120
Change in fair value during the five months ended December 31, 2017	(165)
Balance at December 31, 2017	$ 954

At December 31, 2017, the Company had warrants outstanding ("2017 Warrants") to purchase 377,273 shares of common stock, having an exercise price of $39.82 per share, that were previously issued by Threshold, and which were recorded by Molecular as a liability as part of the Merger transaction.

At December 31, 2016, the Company had warrants outstanding ("2014 Warrants") to purchase 48,874 shares of preferred stock, having an exercise price of $3.07 per share, which were issued by Molecular as part of the loan and security agreement with Silicon Valley Bank ("SVB"). These warrants were converted into common stock at the closing of the Merger. Refer to Note 8, Borrowing Arrangements, for further details about the SVB loan and security agreement. Refer to Note 3 – Merger with Private Molecular. The fair value of these warrants on December 31, 2017 and 2016 was determined using a Black-Scholes model with the following key level 3 inputs:

	December 31, 2017	December 31, 2016
Risk-free interest rate	1.89 %	1.20 %
Expected life (in years)	2.13	2.25
Dividend yield	—	—
Volatility	103 %	76 %
Stock price at valuation date	$ 10.02	$ 3.07

During the year ended December 31, 2017 the change in fair value of $128,000 of noncash expense related to the warrants was recorded as Change in fair value of warrant liabilities in the Company's consolidated statement of operations and comprehensive loss.

The following table sets forth the Company's financial liabilities subject to fair value measurements as of December 31, 2017 and 2016 (in thousands):

(in thousands)	Fair Value as of December 31, 2017	Basis of Fair Value Measurements		
		Level 1	Level 2	Level 3
2017 warrants	$ 954	$ —	$ —	$ 954

(in thousands)	Fair Value as of December 31, 2016	Basis of Fair Value Measurements		
		Level 1	Level 2	Level 3
2014 warrants	$ 49	$ —	$ —	$ 49

NOTE 13—EQUITY INCENTIVE PLANS AND STOCK BASED COMPENSATION

2009 Equity Incentive Plan

The 2009 Stock Plan (the "2009 Plan") provides for the issuance of incentive stock options, nonqualified stock options and restricted stock to employees, directors and consultants of the Company. In August 2017, the Company assumed the 2009 Stock Plan as part of the Merger. The maximum number of shares of common stock that may be issued over the term of the 2009 Plan may not

exceed 1,452,268 shares. The Company has reserved a sufficient number of shares of common stock to permit exercise of options in accordance with the terms of the 2009 Plan. The form of the options to be granted under the 2009 Plan will be determined by the Company's Board of Directors at the time of grant. Options generally vest according to a five-year vesting schedule, with 20% of the shares vesting on the one-year anniversary and equal monthly vesting installments thereafter. As of December 31, 2017, options to purchase 101,667 shares of common stock were available for future grants under the 2009 Plan.

2014 Equity Incentive Plan

The terms of the 2014 Equity Incentive Plan ("2014 Plan") provide for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, restricted stock awards, restricted stock unit awards, other stock awards, and performance awards that may be settled in cash, stock, or other property. Stock options may be granted under the 2014 Plan with an exercise price not less than 100% of the fair market value of the common stock on the date of grant. Stock options under the 2014 Plan may be granted with terms of up to ten years and generally vest over a period of four years, with the exception of grants to non-employee directors and consultants where the vesting period is or may be shorter. As of December 31, 2017, options to purchase 637,029 shares of common stock were available for future grants under the 2014 Plan.

2004 Equity Incentive Plan

The 2004 Equity Incentive Plan ("2004 Plan") provided for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, stock awards and cash awards to employees and consultants. Stock options were granted under the 2004 Plan with an exercise price not less than 100% of the fair market value of the common stock on the date of grant. Stock options under the 2004 Plan were granted with terms of up to ten years and generally vested over a period of four years. The 2004 Plan expired pursuant to its terms on April 7, 2014. No additional awards have been or will be made after April 7, 2014 under the 2004 Plan.

2004 Employee Stock Purchase Plan

On January 1, 2017 and 2016 an additional 9,091 shares were authorized for issuance under the 2004 Employee Stock Purchase Plan ("2004 Purchase Plan") pursuant to the annual automatic increase to the authorized shares under the 2004 Purchase Plan. The 2004 Purchase Plan contains consecutive, overlapping 24 month offering periods. Each offering period includes four six-month purchase periods. The price of the common stock purchased will be the lower of 85% of the fair market value of the common stock at the beginning of an offering period or at the end of the purchase period. For the year ended December 31, 2017, employees had purchased 2,868 shares of common stock under the 2004 Purchase Plan at an average purchase price of $2.80. At December 31, 2017, 18,917 shares were authorized and available for issuance under the 2004 Purchase Plan. For the year ended December 31, 2016, employees had purchased 8,368 shares of common stock under the 2004 Purchase Plan at an average price of $2.75.

Threshold equity awards issued and outstanding at the time of the Merger pursuant to the 2004 Plan and the 2014 Plan remain issued and outstanding. However, for accounting purposes, Threshold equity awards are assumed to have been exchanged for equity awards of Private Molecular, the accounting acquirer.

The following table summarizes information about stock option activityassuming Threshold equity award plans were assumed by Private Molecularfor years ended December 31, 2017 and 2016:

	Outstanding Options Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value as of 12/31/2017 (in millions)
Balances, December 31, 2015	922,628	$ 0.89	6.6	$ 0.90
Options granted	31,845	1.85		
Options exercised	(1,513)	1.64		
Options canceled	(11,276)	1.10		
Balances, December 31, 2016	941,684	$ 0.92	5.7	$ 0.90
Options assumed in merger (1)	963,681	33.62		
Options granted	1,116,627	8.30		
Options exercised	(17,473)	3.66		
Options canceled	(235,808)	35.48		
Balances, December 31, 2017	2,768,711	$ 12.07	5.6	$ 11.00
Vested and expected to vest December 31, 2017	2,768,711	$ 12.07	5.6	$ 11.00
Exercisable at December 31, 2017	1,634,268	$ 14.76	2.8	$ 8.90

(1) Private Molecular, as an accounting acquirer assumed stock options covering an aggregate of 963,681 shares of common stock.

At December 31, 2017, stock options outstanding and exercisable by exercise price were as follows:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices	Number Outstanding	Weighted Average Remaining Contractual Life (Years)	Weighted Average Exercise Price	Number Exercisable	Weighted Average Exercise Price
$ 0.42–0.71	480,949	2.14	$ 0.55	480,949	$ 0.55
$ 1.27–1.27	400,412	5.60	$ 1.27	393,560	$ 1.27
$ 1.85–6.05	328,929	4.76	$ 5.26	212,849	$ 5.60
$ 7.14–9.40	1,022,197	9.69	$ 8.64	10,686	$ 7.99
$ 14.30–42.57	277,168	1.53	$ 24.49	277,168	$ 24.49
$ 45.65–85.25	259,056	1.50	$ 59.00	259,056	$ 59.00
$ 0.42–85.25	2,768,711	5.62	$ 12.07	1,634,268	$ 14.76

The total intrinsic value of stock options exercised during the years ended December 31, 2017 and 2016 were $78,000 and $0, respectively, determined at the date of the option exercise. Cash received from stock option exercises were $61,000 and $2,000 for the years ended December 31, 2017 and 2016, respectively. The Company issues new shares of common stock upon exercise of options. In connection with these exercises, there was no tax benefit realized by the Company due to its current loss position.

Stock-based Compensation

The Company recognizes stock-based compensation in accordance with ASC 718, *"Compensation—Stock Compensation."* Under this guidance, stock-based compensation cost is based on the recognition of the grant date fair value estimated in accordance with the provisions of ASC 815 over the service period, which is generally the vesting period. The Company accounts for forfeitures as they occur. Stock-based compensation expense, which consists of the compensation cost for employee stock options and the value of options issued to non-employees for services rendered, was allocated to research and development and general and administrative in the consolidated statements of operations as follows (in thousands):

	Years Ended December 31,	
	2017	2016
Stock-based compensation expense:		
Research and development	$ 340	$ 0
General and administrative	1,452	109
	$ 1,792	$ 109

Employee Stock-based Compensation Expense

Valuation Assumptions

The Company estimated the fair value of stock options granted using the Black-Scholes option-pricing formula and a single option award approach. This fair value is being amortized ratably over the requisite service periods of the awards, which is generally the vesting period. The Company accounts for forfeitures as they occur. The fair value of employee stock options was estimated using the following weighted-average assumptions for the years ended December 31, 2017 and 2016:

	Years Ended December 31,	
	2017	2016
Employee Stock Options		
Risk-free interest rate	2.06 %	1.25 %
Expected life (in years)	6.07	5.00
Dividend yield	—	—
Volatility	110 %	76 %
Weighted-average fair value of stock options granted	$ 6.94	$ 1.31

To determine the expected term of the Company's employee stock options granted, the Company utilized the simplified approach as defined by SEC Staff Accounting Bulletin No. 107, *"Share-Based Payment"*. To determine the risk-free interest rate, the Company utilized an average interest rate based on U.S. Treasury instruments with a term consistent with the expected term of the Company's stock based awards. To determine the expected stock price volatility for the Company's stock based awards, the Company considers its historical volatility and its industry peers. The fair value of all the Company's stock based awards assumes no dividends as the Company does not anticipate paying cash dividends on its common stock.

The Company recognized $1.8 million and $0.1 million of stock-based compensation expense related to stock options granted under the Company's equity compensation plans, for the years ended December 31, 2017 and 2016, respectively. Additionally, pursuant to the terms of the Merger Agreement, the participants in the 2014 Equity Incentive Plan received accelerated vesting for all or a portion of their pre-merger awards as well as a modification of the exercise period. The Company recorded $1.2 million in stock compensation associated with the transaction.

As of December 31, 2017, the total unrecognized compensation cost related to unvested stock-based awards granted to employees under the Company's equity compensation plans was approximately $7.1 million. This cost will be recorded as compensation expense ratably over the remaining weighted average requisite service period of approximately 3.5 years.

NOTE 14—INCOME TAXES

The Tax Reform Act was enacted in December 2017. The Tax Act significantly changes U.S. tax law by, among other things, lowering U.S. corporate income tax rates, implementing a territorial tax system, and imposing a one-time transition tax on deemed repatriated earnings of foreign subsidiaries. The Tax Act reduces the U.S. corporate income tax rate from 35% to 21%, effective January 1, 2018.

Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to reverse. As a result of the reduction in the U.S. corporate income tax rate from 35% to 21% under the Tax Act, we revalued our ending net deferred tax assets and liabilities at December 31, 2017 and recognized a $6.9 million tax expense that was offset by a change in valuation allowance.

The Tax Act provided for a one-time transition tax on the deemed repatriation of post-1986 undistributed foreign subsidiary earnings and profits ("E&P"). The Company currently has one foreign subsidiary that has not commenced operations. As a result, the international aspects of the Tax Act are not applicable.

In connection with the initial analysis of the impact of the Tax Act, the Company remeasured certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future, which is generally 21%. The remeasurement of the Company's deferred tax balance was primarily offset by application of its valuation allowance. The Company is still analyzing certain aspects of the Tax Act and refining its calculations, which could potentially affect the measurement of these balances or potentially give rise to new deferred tax amounts. Where the Company has been able to make reasonable estimates of the effects for which its analysis is not yet complete, the Company has recorded provisional amounts related to the remeasurement of the deferred tax balance. Where the Company has not yet been able to make reasonable estimates of the impact of certain elements, the Company has not recorded any amounts related to those elements and has continued accounting for them in accordance with ASC 740 on the basis of the tax laws in effect immediately prior to the enactment of the Tax Act.

For the years ended December 31, 2017 and 2016, the Company did not record an income tax provision due to net operating losses and the inability to record an income tax benefit.

A reconciliation of income taxes at the statutory federal income tax rate to net income taxes included in the accompanying statements of operations is as follows (in thousands):

	2017	2016
U.S. federal taxes (benefit) at statutory rate	$ (7,867)	$ (3,750)
State federal income tax benefit	(21)	10
Permanent differences	87	105
Research and development credits	(237)	(339)
Change in valuation allowance due to operations	4,766	3,974
Acquisition-related permanent differences	2,281	—
Expiring state carryovers and other	991	—
Change in valuation allowance due to Tax Act	(6,863)	—
U.S. Statutory Rate Change due to Tax Act	6,863	—
Total	$ —	$ —

The tax effects of temporary differences that give rise to significant components of the net deferred tax assets are as follows (in thousands):

	December 31,	
	2017	2016
Deferred tax assets		
Net operating loss carryforward	$ 13,797	$ 10,446
Research and development credits	5,060	$ 965
Deferred stock compensation	4,058	$ 8
Deferred revenue	581	636
Other	254	9
Total deferred tax assets	23,750	12,064
Total deferred tax liabilities		
Depreciable and amortizable assets	(282)	(329)
R&D intangible assets	(5,591)	—
Total deferred tax liabilities	(5,873)	(329)
Less: Valuation allowance	(17,877)	(11,735)
Net deferred tax assets	$ —	$ —

At December 31, 2017, the Company had federal and state net operating loss carryforwards of approximately $63.2 million and $7.6 million, respectively, available to offset future taxable income. The Company's federal and state net operating loss carryforwards will begin to expire in 2021 and 2017, respectively, if not used before such time to offset future taxable income or tax liabilities. For federal and state income tax purposes, a portion of the Company's net operating loss carryforward is subject to certain limitations on annual utilization in case of changes in ownership, as defined by federal and state tax laws. The annual limitation may result in the expiration of the net operating loss before utilization.

At December 31, 2017, the Company had federal research and development tax credits of approximately $1.1 million, which expire in the year beginning 2022, and state research and development tax credits of approximately $4.9 million, which have no expiration date.

The Company has established a valuation allowance against its deferred tax assets due to the uncertainty surrounding the realization of such assets. The valuation allowance increased by $4.8 million from continuing operations, and the remaining changes in valuation allowance relates to the acquired assets and tax rate changes.

The total amount of unrecognized benefits as of December 31, 2017 and 2016 was $1.1 million and $0, respectively. The reconciliation of unrecognized tax benefits at the beginning and end of the year is as follows:

(in thousands)	2017	2016
Gross unrecognized tax benefits at January 1,	$ —	$ —
Gross increases (decreases) related to acquisitions	1,064	—
Gross increases (decreases) related to current year tax positions	79	—
Gross unrecognized tax benefits at December 31,	$ 1,143	$ —

Included in the balance of unrecognized tax benefits as of December 31, 2017 is $79,000 that is expected to be recognized in the next twelve months and will not affect the Company's effective tax rate.

The Company's policy is to recognize interest and/or penalties related to income tax matters in income tax expense. As of December 31, 2017 and 2016, the Company had no accrued interest or penalties due to the Company's net operating losses available to offset any tax adjustment. The Company currently has no federal or state tax examinations in progress nor has it had any federal or state tax examinations since its inception. As a result of the Company's net operating loss carryforwards, all of its tax years are subject to federal and state tax examination.

NOTE 15—EMPLOYEE BENEFIT PLAN

The Company sponsors a defined-contribution savings plan under Section 401(k) of the Internal Revenue Code covering all full-time employees ("Molecular Templates 401(k) Plan"). The Molecular Templates 401(k) Plan is intended to qualify under Section 401 of the Internal Revenue Code.

Participants meeting certain criteria, as defined in the plan document, are eligible for a matching contribution, ("Company Match") in amounts determined at the discretion of the Company. The matching funds become fully vested after three years of service, 25% in year one, 50% in year two, and 100% in year three. Contributions to the Molecular Templates 401(k) Plan by the Company were $0 and $43,000 for the years ended December 31, 2017 and 2016, respectively.

As part of the merger on August 1, 2017, the Company assumed Threshold Pharmaceuticals Inc. 401(k) plan, which had been setup to provide a retirement savings program for the former employees of the Threshold Pharmaceuticals, Inc. The 401(k) plan is intended to qualify under Section 401 of the Internal Revenue Code. As of December 31, 2017, the Company has not made any contributions to the 401(k) plan.

NOTE 16—SUBSEQUENT EVENTS

On February 27, 2018, the Company entered into a term loan facility with Perceptive Credit Holdings II, LP ("Perceptive") in the amount of $10.0 million ("the Credit Facility"). The Credit Facility consists of a $5.0 million term loan, which was drawn on the effective date of the Credit Facility and an additional $5.0 million term loan to be drawn six months following the effective date of the Credit Facility. The Company intends to use the proceeds from the Credit Facility to pay off the existing debt facility with Silicon Valley Bank. Borrowings under the Credit Facility are secured by all of the property and assets of the Company. The principal on the facility accrues interest at an annual rate equal to a three-month LIBOR plus the Applicable Margin. The Applicable Margin will be

11.00%. Upon the occurrence, and during the continuance, of an event of default, the Applicable Margin, defined above, will be increased by 4.00% per annum. The first twenty four months are interest only. After the second anniversary of the closing date of the Credit Facility, the term loans will amortize at $200,000 per calendar quarter. This term loan facility matures on February 27, 2022 and includes both financial and non-financial covenants, including a minimum cash balance requirement. The Company is required to pay an exit fee of $100,000 on a pro rata basis on the maturity date or the earlier date of repayment of the term loans in full.

In connection with the Credit Facility, on February 27, 2018 the Company issued Perceptive a warrant to purchase 190,000 shares of the Company's common stock. The warrant will be exercisable for a period of seven years from the date of issuance at an exercise price of $9.5792, subject to certain adjustments as specified in the Warrant.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

This Annual Report on Form 10-K 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 Molecular was deemed to be the acquiring company for accounting purposes and the transaction was accounted for as a reverse acquisition in accordance with accounting principles generally accepted in the United States of America ("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 Molecular, and not those of Threshold, 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, Threshold's management was not retained, and its operations were substantially merged with our operations, which resulted in the elimination of previously existing controls of Threshold. Further, and as described below, the acquired operations of Threshold are insignificant to our 2017 financial statements. Since the Merger took place during the third quarter of our fiscal year, 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 Section 215.02 of the SEC's Compliance and Disclosure Interpretations for Regulation S-K.

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 Threshold 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 Threshold 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 Private Molecular'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 Threshold's legacy business comprised less than three percent (3%) 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 ended December 31, 2018 will include a management's report on internal control over financial reporting.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2017. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to its management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of December 31, 2017, our principal executive officer and principal financial officer concluded that, as of such date, our disclosure controls and procedures were not effective at the reasonable assurance level.

Material Weakness

The management of the company is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. As previously disclosed in the Form S-4/A Registration Statement (File No. 333-217993) relating to the Merger, in connection with the audits of Private Molecular's consolidated financial statements for the years ended December 31, 2015 and 2016 and preparation of interim financial statements for the first quarter of 2017, Private Molecular and its independent registered public accounting firm identified a material weakness in Private Molecular's internal control over financial reporting. This material weakness continues to be in place as of December 31, 2017. A material weakness is defined as a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected on a timely basis.

Prior to the completion of the Merger, Private Molecular was a private company and had limited accounting and financial reporting personnel and other resources with which to address its internal controls and procedures. Private Molecular's lack of adequate accounting personnel resulted in the identification of a material weakness in its internal control over financial reporting, which has continued through December 31, 2017. Specifically, Private Molecular did not timely and appropriately account for and disclose the impact of complex, non-routine transactions in accordance with GAAP.

Remediation of Material Weakness

We have begun our remediation plan, and have hired and intend to hire additional accounting and finance personnel. For example, in November 2017, we hired a new Chief Financial Officer and a Senior Vice President, Finance and Corporate Controller, each with extensive accounting and public company experience. Additionally, we are in the process of implementation of more robust review, supervision and monitoring of the non-routine transactions and the financial reporting process intended to remediate the identified material weakness.

Changes in Internal Control over Financial Reporting

Other than as described above, there were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the fiscal quarter ended December 31, 2017 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

The information required by Part III is omitted from this report because we will file a definitive proxy statement within 120 days after the end of our 2017 fiscal year pursuant to Regulation 14A for our 2018 Annual Meeting of Stockholders, or the 2018 Proxy Statement, will be filed pursuant to Regulation 14A of the Securities Exchange Act of 1934, as amended. If the 2018 Proxy Statement is not filed within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K, the omitted information will be included in an amendment to this Annual Report on Form 10-K filed not later than the end of such 120-day period.

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," "Section 16(a) Beneficial Ownership Reporting Compliance," and "Code of Business 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 captions "Security Ownership of Certain Beneficial Owners and Management," and "Equity Compensation Plan Information" 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 AND FI NANCIAL STATEMENT SCHEDULES

The following documents are being filed as part of this report:

(1) The following financial statements of the Company and the report of Ernst & Young LLP are included in Part II, Item 8:

Reports of Independent Registered Public Accounting Firms
Consolidated Balance Sheets
Consolidated Statements of Operations and Comprehensive Loss
Consolidated Statements of Stockholders' Equity
Consolidated Statements of Cash Flows
Notes to Consolidated Financial Statements

(2) All financial statement supporting schedules are omitted because the information is inapplicable or presented in the Notes to Consolidated Financial Statements.

(3) A list of exhibits filed with this report or incorporated herein by reference is found in the Exhibit Index immediately following the signature page of this Annual Report.

EXHIBIT INDEX

EXHIBIT NUMBER	DESCRIPTION
2.1^	Agreement and Plan of Merger and Reorganization, dated March 16, 2017, by and among the Company, Molecular Templates OpCo, Inc. and Trojan Merger Sub, Inc. (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K, as amended (File No. 001-32979), filed on March 17, 2017)
3.1	Amended and Restated Certificate of Incorporation of the Company, as subsequently amended (incorporated by reference to Exhibit 3.1 to the Company's Annual Report on Form 10-K (File No. 001-32979) filed on March 6, 2014)
3.2	Certificate of Amendment of Amended and Restated Certificate of Incorporation of the Company, dated August 1, 2017 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K, as filed with the SEC on August 1, 2017)
3.3	Certificate of Amendment (Name Change) of Amended and Restated Certificate of Incorporation of the Company, dated August 1, 2017 (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K, as filed with the SEC on August 7, 2017)
3.4	Amended and Restated Bylaws of the Company (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K, as amended (File No. 001-32979), filed on September 30, 2016)
4.1	Form of Warrant issued pursuant to the Company's prospectus supplement, dated February 11, 2015, and accompanying prospectus (incorporated by reference to Exhibit 4.9 to the Company's Annual Report on Form 10-K (File No. 001-32979) filed on March 3, 2015)
4.2	Form of Warrant issued pursuant to the Securities Purchase Agreement, dated August 1, 2017, among the Company and the investors named therein (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K, as filed with the SEC on August 7, 2017).
4.3*	Form of Warrant issued to Wedbush Securities, dated December 1, 2017.
10.1+	2004 Amended and Restated Equity Incentive Plan of the Company, as amended (incorporated by reference to Exhibit 10.2 to the Company's Annual Report on Form 10-K (File No. 001-32979) filed on March 15, 2012)
10.2+	Amended and Restated 2004 Employee Stock Purchase Plan (incorporated by reference to Exhibit 99.2 to the Company's Registration Statement on Form S-8 (File No. 333-164865) filed on February 11, 2010)
10.3	Amended and Restated Non-Employee Director Compensation Policy, adopted by the Board of Directors of the Company on October 9, 2017 (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K (File No. 001-32979) filed on October 13, 2017.)
10.4	2014 Equity Incentive Plan, as amended (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K (File No. 001-32979) filed on October 13, 2017)
10.5+	Form of Indemnification Agreement between the Company and each of its directors and executive officers(incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, as filed with the SEC on August 7, 2017)
10.6+	Form of Notice of Grant of Stock Options and Option Agreement under the 2004 Equity Incentive Plan (incorporated by reference to Exhibit 10.25 (File No. 000-51136) to the Company's Current Report on Form 8-K filed on March 17, 2006)

10.7*+	Form of Stock Option Grant Notice and Option Agreement for employees under the 2014 Equity Incentive Plan.
10.8*+	Form of Stock Option Grant Notice and Option Agreement for non-employee directors under the 2014 Equity Incentive Plan.
10.9+	Amended and Restated Executive Employment Agreement, dated April 22, 2016, between Molecular Templates OpCo, Inc. and Eric E. Poma, Ph.D. (incorporated by reference to Exhibit 10.43 to the Company's Registration Statement on Form S-4/A, as filed with the SEC on May 15, 2017)
10.10+	Amended and Restated Executive Employment Agreement, dated April 22, 2016, between Molecular Templates OpCo, Inc. and Jason Kim (incorporated by reference to Exhibit 10.44 to the Company's Registration Statement on Form S-4/A, as filed with the SEC on May 15, 2017)
10.11*+	Amended and Restated Executive Employment Agreement, dated November 3, 2017, by and between the Company and Adam D. Cutler.
10.12	Sales Agreement between the Company and Cowen and Company, LLC, dated November 2, 2015 (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q (File No. 001-32979), filed on November 2, 2015).
10.13	Form of Company Support Agreement by and between Molecular Templates OpCo, Inc. and each of the parties named in each agreement therein (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, as amended (File No. 001-32979), filed on March 17, 2017).
10.14	Form of Molecular Templates OpCo, Inc. Support Agreement by and between the Company and each of the parties named in each agreement therein (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, as amended (File No. 001-32979), filed on March 17, 2017).
10.15	Form of Company Lock-Up Agreement by and between the Company and each of the parties named in each agreement therein (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K, as amended (File No. 001-32979), filed on March 17, 2017).
10.16	Form of Molecular Templates OpCo, Inc. Lock-Up Agreement by and between the Company and each of the parties named in each agreement therein (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K, as amended (File No. 001-32979), filed on March 17, 2017)
10.17	Lease Agreement, dated as of October 1, 2016, by and between NW Austin Officer Partners LLC and Molecular Templates OpCo, Inc., as amended on January 30, 2017 (incorporated by reference to Exhibit 10.28 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017).
10.17.1*	Second Amendment to the Lease Agreement, dated October 1, 2016, by and between NW Austin Officer Partners LLC and Molecular Templates OpCo, Inc., dated March 29, 2017.
10.17.2*	Third Amendment to the Lease Agreement, dated October 1, 2016, by and between NW Austin Officer Partners LLC and Molecular Templates OpCo, Inc., dated June 27, 2017
10.18	Sublease, dated October 1, 2016, by and between Zimmer Holdings, Inc. and Molecular Templates OpCo, Inc. (incorporated by reference to Exhibit 10.29 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017).
10.19	Lease, dated as of August 11, 2016, by and between Evergreen Shipping Agency (America) Corporation and Molecular Templates OpCo, Inc. (incorporated by reference to Exhibit 10.30 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017).
10.20†	Research Collaboration and Option Agreement, dated as of October 31, 2016, by and between Takeda Pharmaceutical Company, Ltd. and Molecular Templates OpCo, Inc. (incorporated by reference to Exhibit 10.31 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017).
10.21†	Non-Exclusive License Agreement, dated as of July 17, 2014, by and between the Henry M. Jackson Foundation for the Advancement of Military Medicine and Molecular Templates OpCo, Inc. (incorporated by reference to Exhibit 10.32 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017).
10.22*+	Molecular Templates Amended and Restated 2009 Stock Plan, as amended through September 19, 2013
10.23*+	Molecular Templates 2009 Stock Plan Form of Option Agreement
10.24	Equity Commitment Letter Agreement, dated as of March 16, 2017, among the Company, Molecular Templates OpCo, Inc., and Longitude Venture Partners III, L.P. (incorporated by reference to Exhibit 10.35 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017)
10.25	Note Purchase Agreement, dated as of March 16, 2017, by and between the Company and Molecular Templates OpCo, Inc. (incorporated by reference to Exhibit 10.39 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017)

10.26	Securities Purchase Agreement, dated August 1, 2017, among the Company and the investors named therein(incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K, as filed with the SEC on August 7, 2017)
10.27	Registration Rights Agreement, dated August 1, 2017, among the Company and the investors named therein(incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K, as filed with the SEC on August 7, 2017)
10.28	Amended and Restated Loan and Security Agreement, dated as of April 30, 2015, by and between Molecular Templates OpCo, Inc. and Silicon Valley Bank (incorporated by reference to Exhibit 10.42 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017)
10.29†	Multi-License Collaboration and License Agreement, dated as of June 23, 2017, by and between Millennium Pharmaceuticals, Inc., a wholly owned subsidiary of Takeda Pharmaceutical Company, Ltd. and Molecular Templates OpCo, Inc. (incorporated by reference to Exhibit 10.3 to the Company's Form 8-K, as filed with the SEC on October 17, 2017)
10.30	Stock Purchase Agreement, dated as of June 23, 2017, by and amongMolecular Templates OpCo, Inc., the Company and Millennium Pharmaceuticals, Inc., a wholly owned subsidiary of Takeda Pharmaceutical Company Ltd. (incorporated by reference to Exhibit 10.48 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017, as amended on June 27, 2017)
10.31†	Cancer Research Grant Contract, dated as of November 7, 2012, by and between the Cancer Prevention & Research Institute of Texas andMolecular Templates OpCo, Inc. (incorporated by reference to Exhibit 10.33 to the Company's Registration Statement on Form S-4, as filed with the SEC on May 15, 2017)
21.1*	Subsidiaries of the Company
23.1*	Consent of Ernst & Young LLP
23.2*	Consent of BDO USA, LLP
31.1*	Certification of Principal Executive Officer Pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities and Exchange Act of 1934, as amended, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Certification of Principal Financial Officer Pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities and Exchange Act of 1934, as amended, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1**	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2**	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

^ 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.

* Filed herewith.

** Furnished herewith. This certification is not deemed filed for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section, and is not deemed to be incorporated by reference into any filing under the Securities Act or the Exchange Act.

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

+ Indicates a management contract or compensatory plan or arrangement.

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.

MOLECULAR TEMPLATES, INC.

March 30, 2018

By: /s/ ERIC E. POMA, PH.D.
Eric E. Poma, Ph.D.
Chief Executive Officer and Chief Scientific Officer

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

Signature	Title	Date
/s/ Eric E. Poma, Ph.D. **Eric E. Poma, Ph.D.**	Chief Executive Officer and Chief Scientific Officer (Principal Executive Officer)	March 30, 2018
/s/ Adam Culter **Adam Cutler**	Chief Financial Officer (Principal Financial and Accounting Officer)	March 30, 2018
/s/ Harold E. Selick, Ph.D. **Harold E. Selick, Ph.D.**	Director	March 30, 2018
/s/ Michael Broxson **Michael Broxson**	Director	March 30, 2018
/s/ David R. Hoffmann **David R. Hoffmann**	Director	March 30, 2018
/s/ David Hirsch **David Hirsch**	Director	March 30, 2018
/s/ Kevin Lalande **Kevin Lalande**	Director	March 30, 2018
/s/ Scott Morenstein **Scott Morenstein**	Director	March 30, 2018

Exhibit 4.3

NEITHER THESE SECURITIES NOR THE SECURITIES ISSUABLE UPON EXERCISE OF THESE SECURITIES HAVE BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR APPLICABLE STATE SECURITIES LAWS. THE SECURITIES MAY NOT BE OFFERED FOR SALE, SOLD, TRANSFERRED OR ASSIGNED (I) IN THE ABSENCE OF (A) AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER THE SECURITIES ACT OR (B) AN AVAILABLE EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN ACCORDANCE WITH APPLICABLE STATE SECURITIES LAWS OR BLUE SKY LAWS AS EVIDENCED BY A LEGAL OPINION OF COUNSEL REASONABLY SATISFACTORY TO THE COMPANY AND ITS TRANSFER AGENT OR (II) UNLESS SOLD PURSUANT TO RULE 144 UNDER THE SECURITIES ACT.

MOLECULAR TEMPLATES, INC.

WARRANT TO PURCHASE COMMON STOCK

Original Issue Date: December 1, 2017

Molecular Templates, Inc., a Delaware corporation (the "Company"), hereby certifies that, for value received, Wedbush Securities Inc., or its permitted registered assigns (the "Holder"), is entitled to purchase from the Company up to a total of 57,930 shares of common stock, $0.001 par value per share (the "Common Stock"), of the Company (the "Warrant Shares") at an exercise price per share equal to $6.8423 per share (as adjusted from time to time as provided in Section 9, the "Exercise Price"), at any time and from time to time on or after the date hereof (the "Original Issue Date") and through and including 5:30 p.m., New York City time, on December 1, 2024 (the "Expiration Date"), and subject to the following terms and conditions:

This Warrant (this "Warrant") is issued pursuant to that certain Engagement Letter, dated December 10, 2015, as amended on December 1, 2017, by and among the Company and the Holder (the "Engagement Letter").

1. Definitions. In addition to the terms defined elsewhere in this Warrant, for the purposes of this Warrant, the following terms shall have the meanings set forth below:

"Exchange Act" means the Securities Exchange Act of 1934, as amended, or any successor statute, and the rules and regulations promulgated thereunder.

"FINRA" means the Financial Industry Regulatory Authority, Inc.

"Law" or "Laws" means any federal, state, local, municipal, foreign or other law, statute, constitution, principle of common law, resolution, ordinance, code, edict, decree, rule,

regulation, ruling or requirement issued, enacted, adopted, promulgated, implemented or otherwise put into effect by or under the authority of any governmental authority.

"Order" means any order, writ, injunction, judgment or decree.

"Person" means an individual, corporation, partnership, limited liability company, trust, business trust, association, joint stock company, joint venture, sole proprietorship, unincorporated organization, governmental authority or any other form of entity not specifically listed herein.

"SEC Filings" means all reports, schedules, forms, statements and other documents required to be filed by the Company under the Exchange Act for the three (3)-year period preceding the Original Issue Date (or such shorter period as the Company was required by Law to file such material), including the exhibits thereto and documents incorporated by reference therein.

2. Registration of Warrant. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose, which may be a third-party transfer agent (the "Warrant Register"), in the name of the record Holder (which shall include the initial Holder or, as the case may be, any registered assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. Subject to compliance with all applicable securities laws, the Company shall register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, with the Form of Assignment attached as Schedule 2 hereto duly completed and signed, to the Company's transfer agent or to the Company at its address specified in the Engagement Letter and (x) delivery, at the request of the Company, of an opinion of counsel reasonably satisfactory to the Company to the effect that the transfer of such portion of this Warrant may be made pursuant to an available exemption from the registration requirements of the Securities Act and all applicable state securities or blue sky laws (other than in connection with any transfer (i) pursuant to an effective registration statement, (ii) to the Company, (iii) pursuant to Rule 144 (provided that such Holder provides the Company with reasonable assurances (in the form of seller and, if applicable, broker representation letters) that the securities may be sold pursuant to such rule) or (iv) in connection with a bona fide pledge) and (y) delivery by the transferee of a written statement to the Company certifying that the transferee is an "accredited investor" as defined in Rule 501(a) under the Securities Act and making the representations and certifications set forth in Section 4(c) of this Warrant, to the Company at its address specified in the Engagement Letter. Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a "New Warrant") evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this

Warrant. The Company shall prepare, issue and deliver at its own expense any New Warrant under this Section 3.

4. Exercise and Duration of Warrant.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by Section 10 at any time and from time to time on or after the Original Issue Date and through and including 5:30 p.m. New York City time, on the Expiration Date. In the event that immediately prior to the close of business on the Expiration Date, the Closing Bid Price of one share of Common Stock (as determined in accordance with Section 10) is greater than the then applicable Exercise Price, this Warrant shall be deemed to be automatically exercised on as "cashless exercise" pursuant to Section 10, and the Company shall deliver the applicable number of shares of Common Stock to the Holder pursuant to the provisions of Section 10.

(b) The Holder may exercise this Warrant by delivering to the Company (i) an exercise notice, in the form attached as Schedule 1 hereto (the "Exercise Notice"), completed and duly signed, and (ii) payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a "cashless exercise" if so indicated in the Exercise Notice pursuant to Section 10), and the date on which the Exercise Notice is delivered to the Company (as determined in accordance with the notice provisions hereof) is an "Exercise Date." The delivery by (or on behalf of) the Holder of the Exercise Notice and the applicable Exercise Price as provided above shall constitute the Holder's certification to the Company that its representations contained in Section 4(c) are true and correct as of the Exercise Date and the date on which Holder pays the Company the Exercise Price as if remade in their entirety (or, in the case of any transferee Holder that is not a party to this Warrant, such transferee Holder's certification to the Company that such representations are true and correct as to such assignee Holder as of the Exercise Date). The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder, but if it is not so delivered then such exercise shall constitute an agreement by the Holder to deliver the original Warrant to the Company as soon as practicable thereafter. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares.

(c) The Holder represents and warrants to the Company that, as of the Original Issue Date:

(i) No Conflict, Breach, Violation or Default. The execution, delivery and performance of this Warrant by the Holder will not (A) conflict with or result in a material breach or material violation of (1) any of the terms and provisions of, or constitute a material default under, its organizational documents, as in effect as of the Original Issue Date, or (2) any Law or Order of any governmental agency or body or any court, domestic or foreign, in each case having jurisdiction over the Holder or any of its assets or properties, or (B) conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, result in the creation of any lien, encumbrance or other adverse claim upon any of the properties or assets of the Holder or give to others any rights of termination, amendment,

acceleration or cancellation (with or without notice, lapse of time or both) of, any material agreement, indenture or instrument to which the Holder is a party; except in the case of clauses (A)(2) and (B) such as would not have a material adverse effect on the ability of the Holder to perform its obligations hereunder.

(ii) Purchase Entirely for Own Account. The Warrant Shares to be received by the Holder upon exercise of this Warrant will be acquired for the Holder's own account, not as nominee or agent, and not with a view to the resale or distribution of any part thereof in violation of the Securities Act, and the Holder has no present agreement, understanding or intention of selling, granting any participation in, or otherwise distributing the same in violation of the Securities Act without prejudice, subject, however, to the Holder's right at all times to sell or otherwise dispose of all or any part of such Warrant Shares in compliance with applicable federal and state securities Laws.

(iii) Investment Experience. The Holder acknowledges that it can bear the economic risk and complete loss of its investment in this Warrant and the Warrant Shares and has such knowledge and experience in financial or business matters that it is capable of evaluating the merits and risks of the investment contemplated hereby.

(iv) Disclosure of Information. The Holder has had an opportunity to review all information related to the Company requested by it and to ask questions of and receive answers from the Company regarding the Company, its business and the terms and conditions of the offering of this Warrant and the Warrant Shares. The Holder acknowledges that copies of the SEC Filings have been made available to it, including, without limitation, copies of the definitive proxy statement filed by the Company on June 30, 2017. The Holder has sought such accounting, legal and tax advice as it has considered necessary to make an informed decision with respect to its acquisition of this Warrant and the Warrant Shares.

(v) Investor Status. At the time the Holder was offered this Warrant, it was, and on the Original Issue Date it is, and on the date on which it exercises this Warrant it will be, an "accredited investor" as defined in Rule 501(a) under the Securities Act.

(vi) Reliance on Exemptions. The Holder understands that this Warrant and the Warrant Shares are being offered and sold to it in reliance on specific exemptions from the registration requirements of federal and state securities Laws and that the Company is relying in part upon the truth and accuracy of, and the Holder's compliance with, the representations, warranties, agreements, acknowledgments and understandings of the Holder set forth in this Warrant in order to determine the availability of such exemptions and the eligibility of the Holder to acquire this Warrant and the Warrant Shares.

5. Delivery of Warrant Shares.

(a) Upon exercise of this Warrant and delivery of the Exercise Price, the Company shall promptly (but in no event later than three Trading Days after the later of the Exercise Date and delivery of the Exercise Price) issue or cause to be issued and cause to be delivered to or upon the written order of the Holder and in such name or names as the Holder may designate

(provided that, if the Holder directs the Company to deliver a certificate for the Warrant Shares in a name other than that of the Holder or an Affiliate of the Holder, it shall deliver to the Company on the Exercise Date an opinion of counsel reasonably satisfactory to the Company to the effect that the issuance of such Warrant Shares in such other name may be made pursuant to an available exemption from the registration requirements of the Securities Act and all applicable state securities or blue sky laws), (i) a certificate for the Warrant Shares issuable upon such exercise, free of restrictive legends, or (ii) an electronic delivery of the Warrant Shares to the Holder's account at the Depository Trust Company ("DTC") or a similar organization, unless in the case of clause (i) and (ii) a registration statement covering the resale of the Warrant Shares and naming the Holder as a selling stockholder thereunder is not then effective or the Warrant Shares are not freely transferable without restriction under Rule 144 by Holders who are not affiliates of the Company, in which case such Holder shall receive a certificate for the Warrant Shares issuable upon such exercise with appropriate restrictive legends. The Holder, or any Person permissibly so designated by the Holder to receive Warrant Shares, shall be deemed to have become the holder of record of such Warrant Shares as of the Exercise Date. Notwithstanding anything contained herein to the contrary, if the Holder fails to deliver the documents required to register a transferee as set forth in Section 3 or to provide the documents required under this Section 5(a) to issue a certificate or electronic delivery of the Warrant Shares to any Person(s) other than the Holder, then determination of the three Trading Days shall be tolled until such documents have been delivered to the Company. If the Warrant Shares are to be issued free of all restrictive legends, the Company shall, upon the written request of the Holder, use its reasonable best efforts to deliver, or cause to be delivered, Warrant Shares hereunder electronically through DTC or another established clearing corporation performing similar functions, if available; provided, that, the Company may, but will not be required to, change its transfer agent if its current transfer agent cannot deliver Warrant Shares electronically through such a clearing corporation. "Trading Day" means any day on which the Common Stock are traded on the Principal Market, or, if the Principal Market is not the principal trading market for the Common Stock, then on the principal securities exchange or securities market on which the Common Stock is then traded; provided that "Trading Day" shall not include any day on which the Common Stock is scheduled to trade on such exchange or market for less than 4.5 hours or any day that the Common Stock are suspended from trading during the final hour of trading on such exchange or market (or if such exchange or market does not designate in advance the closing time of trading on such exchange or market, then during the hour ending at 4:00:00 p.m., New York time).

(b) If by the close of the third Trading Day after delivery of a properly completed Exercise Notice and the payment of the aggregate Exercise Price in any manner permitted by Section 10, the Company fails to deliver to the Holder a certificate representing the required number of Warrant Shares or such Warrant Shares in electronic form in the manner required pursuant to Section 5(a), and if after such third Trading Day and prior to the receipt of such Warrant Shares, the Holder is required to purchase (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a "Buy-In"), then the Company shall, in its sole discretion, within three Trading Days after the Holder's request for payment, either (1) pay in cash to the Holder an amount equal to the Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased, at which point the

number of Warrant Shares underlying this Warrant equal to the number of shares of Common Stock so purchased shall be forfeited and the Company's obligation to deliver such certificate (and to issue such Warrant Shares in certificate or electronic form) shall terminate or (2) promptly honor its obligation to deliver to the Holder a certificate or certificates representing such Warrant Shares or such Warrant Shares in electronic form and pay cash to the Holder in an amount equal to the excess (if any) of Holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased in the Buy-In over the product of (A) the number of shares of Common Stock purchased in the Buy-In, multiplied by (B) the closing bid price of a share of Common Stock on the Exercise Date. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In, together with applicable confirmations and other evidence reasonably requested by the Company.

(c) To the extent permitted by law, the Company's obligations to issue and deliver Warrant Shares in accordance with and subject to the terms hereof are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company (other than breaches related to this Warrant or the Engagement Letter) or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares. Nothing herein shall limit the Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver certificates representing shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof.

6. Charges, Taxes and Expenses. Issuance and delivery of certificates or electronic form for shares of Common Stock upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares or this Warrant in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

7. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable indemnity and surety bond, if requested by the Company. Applicants for a New Warrant under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Company may prescribe. If a New Warrant is requested as a result of a mutilation of this

Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company's obligation to issue the New Warrant.

8. Reservation of Warrant Shares. The Company represents and warrants that on the date hereof, it has duly authorized and reserved, and covenants that it will at all times during the period this Warrant is outstanding reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 9). The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the original issuance thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue). The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of executing stock certificates to execute and issue the necessary certificates for the Warrant Shares upon the exercise of the purchase rights under this Warrant. The Company represents and warrants that the Warrant Shares, when issued and paid for in accordance with the terms of the Engagement Letter and this Warrant, will be issued free and clear of all security interests, claims, liens and other encumbrances other than restrictions imposed by applicable securities laws. The Company will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed.

9. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant are subject to adjustment from time to time as set forth in this Section 9.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares, (iii) combines (by combination, reverse stock split or otherwise) its outstanding shares of Common Stock into a smaller number of shares or (iv) issues by reclassification of shares of Common Stock any shares of capital stock of the Company, then in each such case the Exercise Price shall be adjusted to a price determined by multiplying the Exercise Price in effect immediately prior to the effective date of such event by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding on such effective date immediately before giving effect to such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after giving effect to such event. Any adjustment made pursuant to this Section 9(a) shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii),

(iii) or (iv) of this Section 9(a) shall become effective immediately after the effective date of such subdivision, combination or reclassification.

(b) Pro Rata Distributions. If the Company, at any time while this Warrant is outstanding, distributes to all holders of Common Stock for no consideration (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by Section 9(a)) or (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset, including cash (in each case, "Distributed Property"), except for any distributions pursuant to a shareholders' rights plan or similar takeover defense agreement or plan adopted by the Company, then, upon any exercise of this Warrant that occurs after the record date fixed for determination of stockholders entitled to receive such distribution, the Holder shall be entitled to receive, in addition to the Warrant Shares otherwise issuable upon such exercise (if applicable), the Distributed Property that such Holder would have been entitled to receive in respect of such number of Warrant Shares had the Holder been the record holder of such Warrant Shares immediately prior to such record date.

(c) Fundamental Transactions. If, at any time while this Warrant is outstanding (i) the Company effects (A) any merger of the Company with (but not into) another Person, in which stockholders of the Company immediately prior to such transaction own less than a majority of the outstanding stock of the surviving entity, or (B) any merger or consolidation of the Company into another Person, (ii) the Company effects any sale of all or substantially all of its assets in one or a series of related transactions, (iii) any tender offer or exchange offer approved or authorized by the Company's Board of Directors is completed pursuant to which holders of at least a majority of the outstanding Common Stock tender or exchange their shares for other securities, cash or property, or (iv) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 9(a)) (in any such case, a "Fundamental Transaction"), then the Holder shall have the right thereafter to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant without regard to any limitations on exercise contained herein (the " Alternate Consideration"), and the Holder shall no longer have the right to receive Warrant Shares upon exercise of this Warrant. The Company shall not effect any such Fundamental Transaction unless prior to or simultaneously with the consummation thereof, any successor to the Company, surviving entity or the corporation purchasing or otherwise acquiring such assets or other appropriate corporation or Person shall assume the obligation to deliver to the Holder, such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant. The provisions of this Section 9(c) shall similarly apply to subsequent transactions of an analogous type to any Fundamental Transaction.

(d) Number of Warrant Shares. Simultaneously with any adjustment to the Exercise Price pursuant to Section 9(a), the number of Warrant Shares that may be purchased upon exercise of this Warrant shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased

number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(e) Calculations. All calculations under this Section 9 shall be made to the nearest cent or the nearest share, as applicable.

(f) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 9, the Company at its expense will promptly compute such adjustment, in good faith, in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in reasonable detail the facts upon which such adjustment is based. The Company will promptly deliver a copy of each such certificate to the Holder and to the Company's transfer agent.

(g) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting of rights or warrants to subscribe for or purchase any capital stock of the Company, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then, except if such notice and the contents thereof shall be deemed to constitute material non-public information, the Company shall deliver to the Holder a notice of such transaction at least ten (10) Trading Days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice.

10. Payment of Exercise Price. The Holder shall either pay the Exercise Price in immediately available funds or the Holder may, in its sole discretion, satisfy its obligation to pay the Exercise Price through a "cashless exercise", in which event the Company shall issue to the Holder the number of Warrant Shares determined as follows:

$$X = Y [(A-B)/A]$$

where:

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

Y = the total number of Warrant Shares with respect to which this Warrant is being exercised.

A = the average of the Closing Bid Price of the shares of Common Stock (as reported by Bloomberg Financial Markets) for the five consecutive Trading Days ending on the date immediately preceding the Exercise Date.

B = the Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

For purposes of this Warrant, "Closing Bid Price" means, for any security as of any date, the last reported closing bid price for such security on the Principal Trading Market for such security, as reported by Bloomberg Financial Markets, or, if such Principal Trading Market begins to operate on an extended hours basis and does not designate the closing bid price, then the last bid price of such security prior to 4:00 p.m., New York City time, as reported by Bloomberg Financial Markets, or if the foregoing do not apply, the last closing price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg Financial Markets, or, if no closing bid price is reported for such security by Bloomberg Financial Markets, the average of the bid prices of any market makers for such security as reported in the "pink sheets" by Pink Sheets LLC. If the Closing Bid Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Bid Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then the Board of Directors of the Company shall use its good faith judgment to determine the fair market value. The Board of Directors' determination shall be binding upon all parties absent demonstrable error. All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during the applicable calculation period.

For purposes of Rule 144, it is intended, understood and acknowledged that the provisions above permitting "cashless exercise" are intended, in part, to ensure that a full or partial exchange of this Warrant pursuant to such provisions will qualify as a conversion, within the meaning of paragraph (d)(3)(ii) of Rule 144, and the holding period for the Warrant Shares shall be deemed to have commenced as to such original Holder, on the Original Issue Date.

11. No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number and the Company shall pay the Holder in cash the fair market value (based on the Closing Bid Price) for any such fractional shares.

12. Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in the Engagement Letter prior to 5:30 p.m., New York City time, on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in the Engagement Letter on a day that is not a Trading Day or later than 5:30 p.m., New York City time, on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery. The address and facsimile number of a Person for such notices or communications shall

be as set forth in the Engagement Letter unless changed by such Person by two Trading Days' prior notice to the other Person(s) in accordance with this Section 12.

13. Warrant Agent. The Company shall serve as warrant agent under this Warrant. Upon 15 days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

14. Miscellaneous.

(a) No Rights as a Stockholder. The Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then entitled to receive upon the due exercise of this Warrant. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities, whether such liabilities are asserted by the Company or by creditors of the Company.

(b) Authorized Shares.

(i) The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation or of any requirements of the Trading Market upon which the Common Stock may be listed.

(ii) Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amending its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant, and (c) use commercially reasonable efforts to obtain all such authorizations,

exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant.

(iii) Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(c) No Impairment. Except to the extent as may be waived by the holder of this Warrant, the Company will not, by amendment of its charter or through a Fundamental Transaction, dissolution, or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the Holder against impairment.

(d) Successors and Assigns. Subject to the restrictions on transfer set forth in this Warrant and compliance with applicable securities laws, this Warrant may be assigned by the Holder. This Warrant may not be assigned by the Company without the written consent of the Holder except to a successor in the event of a Fundamental Transaction. This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

(e) Amendment and Waiver. Except as otherwise provided herein, the provisions of this Warrant may be amended and the Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company has obtained the written consent of the Holder.

(f) Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

(g) Governing Law; Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF DELAWARE WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE COURTS OF THE DELAWARE COURT OF CHANCERY AND ANY STATE APPELLATE COURT THEREOF WITHIN THE STATE OF DELAWARE (OR, IF THE DELAWARE COURT OF CHANCERY DECLINES TO ACCEPT JURISDICTION OVER A PARTICULAR MATER, ANY STATE OR FEDERAL COURT WITHIN THE STATE OF DELAWARE) FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HEREWITH OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF THE ENGAGEMENT LETTER), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF

ANY SUCH COURT. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PARTY AT THE ADDRESS IN EFFECT FOR NOTICES TO IT UNDER THE ENGAGEMENT LETTER AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(h) Headings. The headings herein are for convenience only, do not constitute a part of this Warrant and shall not be deemed to limit or affect any of the provisions hereof.

(i) Severability. In case any one or more of the provisions of this Warrant shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Warrant shall not in any way be affected or impaired thereby, and the Company and the Holder will attempt in good faith to agree upon a valid and enforceable provision which as closely as possible reflects the intent of the parties hereto, and upon so agreeing, shall incorporate such substitute provision in this Warrant.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK,
SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed by its authorized officer as of the date first indicated above.

MOLECULAR TEMPLATES, INC.

By:_____
Eric E. Poma
Chief Executive Officer

SCHEDULE 1

MOLECULAR TEMPLATES, INC.

FORM OF EXERCISE NOTICE

[To be executed by the Holder to purchase shares of Common Stock under the Warrant]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. _____ (the "Warrant") issued by Molecular Templates, Inc., a Delaware corporation (the "Company"). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its right to purchase _____ Warrant Shares pursuant to the Warrant.

(3) The Holder intends that payment of the Exercise Price shall be made as (check one):

Cash Exercise

"Cashless Exercise" under Section 10 of the Warrant

(4) If the Holder has elected a Cash Exercise, the Holder shall pay the sum of $_____ in immediately available funds to the Company in accordance with the terms of the Warrant.

(5) Pursuant to this Exercise Notice, the Company shall deliver to the Holder Warrant Shares determined in accordance with the terms of the Warrant. Please issue (check applicable box):

A certificate of certificates representing the Holder Warrant Shares in the name of the undersigned or in such other name as is specified below:

The Holder Warrant Shares in electronic form to the following account:
Name and Contact for Broker:
Broker no:

Account no:
Account holder:

Dated:_____, _____

Name of Holder: _____

By:_____
Name: _____
Title: _____
(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

SCHEDULE 2

MOLECULAR TEMPLATES, INC.

FORM OF ASSIGNMENT

[To be completed and executed by the Holder only upon transfer of the Warrant]

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____ (the "Transferee") the right represented by the within Warrant to purchase _____ shares of Common Stock of Molecular Templates, Inc., a Delaware corporation (the "Company") to which the within Warrant relates and appoints _____ attorney to transfer said right on the books of the Company with full power of substitution in the premises. In connection therewith, the undersigned represents, warrants, covenants and agrees to and with the Company that:

(a) the offer and sale of the Warrant contemplated hereby is being made in compliance with Section 4(1) of the United States Securities Act of 1933, as amended (the "Securities Act"), or another valid exemption from the registration requirements of Section 5 of the Securities Act and in compliance with all applicable securities laws of the states of the United States;

(b) the undersigned has not offered to sell the Warrant by any form of general solicitation or general advertising, including, but not limited to, any advertisement, article, notice or other communication published in any newspaper, magazine or similar media or broadcast over television or radio, and any seminar or meeting whose attendees have been invited by any general solicitation or general advertising;

(c) the undersigned has read the Transferee's investment letter included herewith, and to its actual knowledge, the statements made therein are true and correct; and

(d) the undersigned understands that the Company may condition the transfer of the Warrant contemplated hereby upon the delivery to the Company by the undersigned or the Transferee, as the case may be, of a written opinion of counsel (which opinion shall be in form, substance and scope customary for opinions of counsel in comparable transactions) to the effect that such transfer may be made without registration under the Securities Act and under applicable securities laws of the states of the United States.

Dated: _____, __

(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

Address of Transferee

In the presence of:

Exhibit 10.7

Molecular Templates, Inc.
2014 Equity Incentive Plan, as amended

Option Agreement
(Incentive Stock Option or Nonstatutory Stock Option)

Pursuant to your Notice of Grant of Stock Options ("***Grant Notice***") and this Option Agreement, Molecular Templates, Inc. (the "***Company***") has granted you an option under its 2014 Equity Incentive Plan (the "***Plan***") to purchase the number of shares of the Company's Common Stock indicated in your Grant Notice at the exercise price indicated in your Grant Notice. The option is granted to you effective as of the date of grant set forth in the Grant Notice (the "***Date of Grant***"). This Option Agreement shall be deemed to be agreed to by the Company and you upon the electronic signing or electronically accepting by you of the Grant Notice. If there is any conflict between the terms in this Option Agreement and the Plan, the terms of the Plan will control. Capitalized terms not explicitly defined in this Option Agreement or in the Grant Notice but defined in the Plan will have the same definitions as in the Plan.

The details of your option, in addition to those set forth in the Grant Notice and the Plan, are as follows:

1. Vesting. Your option will vest as provided in your Grant Notice. Vesting will cease upon the termination of your Continuous Service.

2. Number of Shares and Exercise Price. The number of shares of Common Stock subject to your option and your exercise price per share in your Grant Notice will be adjusted for Capitalization Adjustments.

3. Exercise Restriction for Non-Exempt Employees. If you are an Employee eligible for overtime compensation under the Fair Labor Standards Act of 1938, as amended (that is, a "***Non-Exempt Employee***"), and except as otherwise provided in the Plan, you may not exercise your option until you have completed at least six (6) months of Continuous Service measured from the Date of Grant, even if you have already been an employee for more than six (6) months. Consistent with the provisions of the Worker Economic Opportunity Act, you may exercise your option as to any vested portion prior to such six (6) month anniversary in the case of (i) your death or disability, (ii) a Fundamental Transaction in which your option is not assumed, continued or substituted, (iii) a Change in Control or (iv) your termination of Continuous Service on your "retirement" (as defined in the Company's benefit plans).

4. Method of Payment. You must pay the full amount of the exercise price for the shares you wish to exercise. You may pay the exercise price as follows:

(a) In cash or by check, bank draft or money order payable to the Company.

(b) To the extent permitted by the Company, pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board that, prior to the issuance of

Common Stock, results in either the receipt of cash (or check) by the Company or the receipt of irrevocable instructions to pay the aggregate exercise price to the Company from the sales proceeds. This manner of payment is also known as a "broker-assisted exercise", "same day sale", or "sell to cover".

(c) By delivery to the Company (either by actual delivery or attestation) of already-owned shares of Common Stock that are owned free and clear of any liens, claims, encumbrances or security interests, and that are valued at Fair Market Value on the date of exercise. "Delivery" for these purposes, in the sole discretion of the Company at the time you exercise your option, will include delivery to the Company of your attestation of ownership of such shares of Common Stock in a form approved by the Company. You may not exercise your option by delivery to the Company of Common Stock if doing so would violate the provisions of any law, regulation or agreement restricting the redemption of the Company's stock.

(d) If this option is a Nonstatutory Stock Option, subject to the consent of the Company at the time of exercise, by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Common Stock issued upon exercise of your option by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price. You must pay any remaining balance of the aggregate exercise price not satisfied by the "net exercis e" in cash or other permitted form of payment. Shares of Common Stock will no longer be outstanding under your option and will not be exercisable thereafter if those shares (i) are used to pay the exercise price pursuant to the "net exercise," (ii) are delivered to you as a result of such exercise, and (iii) are withheld to satisfy tax withholding obligations.

5. Whole Shares. You may exercise your option only for whole shares of Common Stock.

6. Securities Law Compliance. In no event may you exercise your option unless the shares of Common Stock issuable upon such exercise are then registered under the Securities Act or, if not registered, the Company has determined that your exercise and the issuance of the shares would be exempt from the registration requirements of the Securities Act. The exercise of your option also must comply with all other applicable laws and regulations governing your option, and you may not exercise your option if the Company determines that such exercise would not be in material compliance with such laws and regulations (including any restrictions on exercise required for compliance with Treas. Reg. 1.401(k)-1(d)(3), if applicable).

7. Term. You may not exercise your option before the Date of Grant or after the expiration of the option's term. The term of your option expires, subject to the provisions of Section 5(h) of the Plan, upon the earliest of the following:

(a) immediately upon the termination of your Continuous Service for Cause;

(b) three (3) months after the termination of your Continuous Service for any reason other than Cause, your Disability or your death (except as otherwise provided in Section 7(e) below); *provided, however,* that if during any part of such three (3) month period your option is not exercisable solely because of the condition set forth in the section above relating to

"Securities Law Compliance," your option will not expire until the earlier of the Expiration Date or until it has been exercisable for an aggregate period of three (3) months after the termination of your Continuous Service; *provided further,* if during any part of such three (3) month period, the sale of any Common Stock received upon exercise of your option would violate the Company's insider trading policy, then your option will not expire until the earlier of the Expiration Date or until it has been exercisable for an aggregate period of three (3) months (that need not be consecutive) after the termination of your Continuous Service during which the sale of the Common Stock received upon exercise of your option would not be in violation of the Company's insider trading policy. Notwithstanding the foregoing, if (i) you are a Non-Exempt Employee, (ii) your Continuous Service terminates within six (6) months after the Date of Grant, and (iii) you have vested in a portion of your option at the time of your termination of Continuous Service, your option will not expire until the earlier of (x) the later of (A) the date that is seven (7) months after the Date of Grant, and (B) the date that is three (3) months (that need not be consecutive) after the termination of your Continuous Service, and (y) the Expiration Date;

(c) three (3) months following the beginning of your leave of absence (other than a personal or medical leave of absence approved by an authorized representative of the Company with employment guaranteed upon return) (except as otherwise provided in Section 7(e) below);

(d) twelve (12) months after the termination of your Continuous Service due to your Disability (except as otherwise provided in Section 7(e)) below;

(e) eighteen (18) months after your death if you die either during your Continuous Service or within three (3) months after your Continuous Service terminates for any reason other than Cause;

(f) the Expiration Date indicated in your Grant Notice; or

(g) the day before the tenth (10th) anniversary of the Date of Grant.

If your option is an Incentive Stock Option, note that to obtain the federal income tax advantages associated with an Incentive Stock Option, the Code requires that at all times beginning on the Date of Grant and ending on the day three (3) months before the date of your option's exercise, you must be an employee of the Company or an Affiliate, except in the event of your death or Disability. The Company has provided for extended exercisability of your option under certain circumstances for your benefit but cannot guarantee that your option will necessarily be treated as an Incentive Stock Option if you continue to provide services to the Company or an Affiliate as a Consultant or Director after your employment terminates or if you otherwise exercise your option more than three (3) months after the date your employment with the Company or an Affiliate terminates.

8. Exercise.

(a) You may exercise the vested portion of your option during its term by delivering a Notice of Exercise (in a written or electronic form designated by the Company) or taking such other action as the Company may require together with delivering the exercise price

and any applicable withholding taxes to the Company's Secretary or to such other person as the Company may designate (such as any broker designated by the Company to effect option exercises) during regular business hours, together with such additional documents as the Company may then require.

(b) By exercising your option you agree that, as a condition to any exercise of your option, the Company may require you to enter into an arrangement providing for the payment by you to the Company of any tax withholding obligation of the Company arising by reason of (i) the exercise of your option, (ii) the lapse of any substantial risk of forfeiture to which the shares of Common Stock are subject at the time of exercise, or (iii) the disposition of shares of Common Stock acquired upon such exercise.

(c) If your option is an Incentive Stock Option, by exercising your option you agree that you will notify the Company in writing within fifteen (15) days after the date of any disposition of any of the shares of the Common Stock issued upon exercise of your option that occurs within two (2) years after the Date of Grant or within one (1) year after such shares of Common Stock are transferred upon exercise of your option.

9. Transferability. Except as otherwise provided in this Section 9 , your option is not transferable, except by will or by the laws of descent and distribution, and is exercisable during your life only by you.

(a) Certain Trusts. Upon receiving written permission from the Board or its duly authorized designee , you may transfer your option to a trust if you are considered to be the sole beneficial owner (determined under Section 671 of the Code and applicable state law) while the option is held in the trust. You and the trustee must enter into transfer and other agreements required by the Company.

(b) Domestic Relations Orders. Upon receiving written permission from the Board or its duly authorized designee, and provided that you and the designated transferee enter into transfer and other agreements required by the Company, you may transfer your option pursuant to the terms of a domestic relations order, official marital settlement agreement or other divorce or separation instrument as permitted by Treasury Regulation 1.421-1(b)(2) that contains the information required by the Company to effectuate the transfer. You are encouraged to discuss the proposed terms of any division of this option with the Company prior to finalizing the domestic relations order or marital settlement agreement to help ensure the required information is contained within the domestic relations order or marital settlement agreement. If this option is an Incentive Stock Option, this option may be deemed to be a Nonstatutory Stock Option as a result of such transfer.

(c) Beneficiary Designation. Upon receiving written permission from the Board or its duly authorized designee, you may , by delivering written notice to the Company, in a form approved by the Company and any broker designated by the Company to handle option exercises, designate a third party who, on your death, will thereafter be entitled to exercise this option and receive the Common Stock or other consideration resulting from such exercise. In the absence of such a designation, your executor or administrator of your estate will be entitled to

exercise this option and receive, on behalf of your estate, the Common Stock or other consideration resulting from such exercise.

(d) Lock-Up Period. You agree that in the event the Company proposes to offer for sale to the public any of its equity securities and you are requested by the Company and any underwriter engaged by the Company in connection with such offering to sign an agreement restricting the sale or other transfer of shares, then you will promptly sign such agreement and will not transfer, whether in privately negotiated transactions or to the public in open market transactions or otherwise, any shares or other securities of the Company held by you during such period as is determined by the Company and the underwriters, not to exceed 180 days following the closing of the offering, plus such additional period of time as may be required to comply with FINRA rules or similar rules thereto promulgated by another regulatory authority (such period, the "***Lock-Up Period***"). Such agreement shall be in writing and in form and substance reasonably satisfactory to the Company and such underwriter and pursuant to customary and prevailing terms and conditions. Notwithstanding whether you have signed such an agreement, the Company may impose stop-transfer instructions with respect to the shares or other securities of the Company subject to the foregoing restrictions until the end of the Lock-Up Period.

(e) No Duty to Disclose. You acknowledge and agree that neither the Company, its stockholders nor its directors and officers, has any duty or obligation to disclose to you any material information regarding the business of the Company or affecting the value of the shares before, at the time of, or following a termination of your service by the Company, including, without limitation, any information concerning plans for the Company to make a public offering of its securities or to be acquired by or merged with or into another firm or entity.

10. Option not a Service Contract. Your option is not an employment or service contract, and nothing in your option will be deemed to create in any way whatsoever any obligation on your part to continue in the employ of the Company or an Affiliate, or of the Company or an Affiliate to continue your employment. In addition, nothing in your option will obligate the Company or an Affiliate, their respective stockholders, boards of directors, officers or employees to continue any relationship that you might have as a Director or Consultant for the Company or an Affiliate.

11. Withholding Obligations.

(a) At the time you exercise your option, in whole or in part, and at any time thereafter as requested by the Company, you hereby authorize withholding from payroll and any other amounts payable to you, and otherwise agree to make adequate provision for (including by means of a "same day sale" pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board to the extent permitted by the Company), any sums required to satisfy the federal, state, local and foreign tax withholding obligations of the Company or an Affiliate, if any, which arise in connection with the exercise of your option.

(b) If this option is a Nonstatutory Stock Option, then upon your request and subject to approval by the Company, and compliance with any applicable legal conditions or restrictions, the Company may withhold from fully vested shares of Common Stock otherwise issuable to you upon the exercise of your option a number of whole shares of Common Stock

having a Fair Market Value, determined by the Company as of the date of exercise, not in excess of the minimum amount of tax required to be withheld by law (or such lower amount as may be necessary to avoid classification of your option as a liability for financial accounting purposes). If the date of determination of any tax withholding obligation is deferred to a date later than the date of exercise of your option, share withholding pursuant to the preceding sentence shall not be permitted unless you make a proper and timely election under Section 83(b) of the Code, covering the aggregate number of shares of Common Stock acquired upon such exercise with respect to which such determination is otherwise deferred, to accelerate the determination of such tax withholding obligation to the date of exercise of your option. Notwithstanding the filing of such election, shares of Common Stock shall be withheld solely from fully vested shares of Common Stock determined as of the date of exercise of your option that are otherwise issuable to you upon such exercise. Any adverse consequences to you arising in connection with such share withholding procedure shall be your sole responsibility.

(c) You may not exercise your option unless the tax withholding obligations of the Company and/or any Affiliate are satisfied. Accordingly, you may not be able to exercise your option when desired even though your option is vested, and the Company will have no obligation to issue a certificate for such shares of Common Stock or release such shares of Common Stock from any escrow provided for herein, if applicable, unless such obligations are satisfied.

12. Tax Consequences. You hereby agree that the Company does not have a duty to design or administer the Plan or its other compensation programs in a manner that minimizes your tax liabilities. You will not make any claim against the Company, or any of its Officers, Directors, Employees or Affiliates related to tax liabilities arising from your option or your other compensation. In particular, you acknowledge that this option is exempt from Section 409A of the Code only if the exercise price per share specified in the Grant Notice is at least equal to the "fair market value" per share of the Common Stock on the Date of Grant and there is no other impermissible deferral of compensation associated with the option.

13. Notices. Any notices provided for in your option or the Plan will be given in writing (including electronically) and will be deemed effectively given upon receipt or, in the case of notices delivered by mail by the Company to you, five (5) days after deposit in the United States mail, postage prepaid, addressed to you at the last address you provided to the Company. The Company may, in its sole discretion, decide to deliver any documents related to participation in the Plan and this option by electronic means or to request your consent to participate in the Plan by electronic means. By accepting this option, you consent to receive such documents by electronic delivery and to participate in the Plan through an on-line or electronic system established and maintained by the Company or another third party designated by the Company.

14. Governing Plan Document. Your option is subject to all the provisions of the Plan, the provisions of which are hereby made a part of your option, and is further subject to all interpretations, amendments, rules and regulations, which may from time to time be promulgated and adopted pursuant to the Plan. If there is any conflict between the provisions of your option and those of the Plan, the provisions of the Plan will control. In addition, your option (and any compensation paid or shares issued under your option) is subject to recoupment in accordance

with The Dodd–Frank Wall Street Reform and Consumer Protection Act and any implementing regulations thereunder, any clawback policy adopted by the Company and any compensation recovery policy otherwise required by applicable law.

15. Other Documents. You hereby acknowledge receipt of and the right to receive a document providing the information required by Rule 428(b)(1) promulgated under the Securities Act, which includes the Plan prospectus. In addition, you acknowledge receipt of the Company's policy permitting certain individuals to sell shares only during certain "window" periods and the Company's insider trading policy, in effect from time to time.

16. Governing Law. This Option Agreement shall be governed by and construed in accordance with the laws of the State of Delaware, without giving effect to the conflict of law principles thereof. For the purpose of litigating any dispute that arises under this Agreement, the parties hereby consent to exclusive jurisdiction in Texas and agree that such litigation shall be conducted in the state courts in the count of Austin, Texas or the federal courts of the United States for the Western District of Texas.

17. Data Privacy. By entering into this Agreement, the Participant: (i) authorizes the Company and each Affiliate, and any agent of the Company or any Affiliate administering the Plan or providing Plan recordkeeping services, to disclose to the Company or any of its Affiliates such information and data as the Company or any such Affiliate shall request in order to facilitate the grant of options and the administration of the Plan; and (ii) authorizes the Company and each Affiliate to store and transmit such information in electronic form for the purposes set forth in this Agreement.

18. Effect on Other Employee Benefit Plans. The value of this option will not be included as compensation, earnings, salaries, or other similar terms used when calculating your benefits under any employee benefit plan sponsored by the Company or any Affiliate, except as such plan otherwise expressly provides. The Company expressly reserves its rights to amend, modify, or terminate any of the Company's or any Affiliate's employee benefit plans.

19. Voting Rights. You will not have voting or any other rights as a stockholder of the Company with respect to the shares to be issued pursuant to this option until such shares are issued to you. Upon such issuance, you will obtain full voting and other rights as a stockholder of the Company. Nothing contained in this option, and no action taken pursuant to its provisions, will create or be construed to create a trust of any kind or a fiduciary relationship between you and the Company or any other person.

20. Severability. If all or any part of this Option Agreement or the Plan is declared by any court or governmental authority to be unlawful or invalid, such unlawfulness or invalidity will not invalidate any portion of this Option Agreement or the Plan not declared to be unlawful or invalid. Any Section of this Option Agreement (or part of such a Section) so declared to be unlawful or invalid shall, if possible, be construed in a manner which will give effect to the terms of such Section or part of a Section to the fullest extent possible while remaining lawful and valid.

21. Miscellaneous.

(a) The rights and obligations of the Company under your option will be transferable to any one or more persons or entities, and all covenants and agreements hereunder will inure to the benefit of, and be enforceable by the Company's successors and assigns.

(b) You agree upon request to execute any further documents or instruments necessary or desirable in the sole determination of the Company to carry out the purposes or intent of your option.

(c) You acknowledge and agree that you have reviewed your option in its entirety, have had an opportunity to obtain the advice of counsel prior to executing and accepting your option, and fully understand all provisions of your option.

(d) This Option Agreement will be subject to all applicable laws, rules, and regulations, and to such approvals by any governmental agencies or national securities exchanges as may be required.

(e) All obligations of the Company under the Plan and this Option Agreement will be binding on any successor to the Company, whether the existence of such successor is the result of a direct or indirect purchase, merger, consolidation, or otherwise, of all or substantially all of the business and/or assets of the Company.

* **

This Option Agreement will be deemed to be signed by you upon the signing by you of the Notice of Grant of Stock Options to which it is attached.

Molecular Templates, Inc.
2014 Equity Incentive Plan, as amended

Option Agreement
(Incentive Stock Option or Nonstatutory Stock Option)

Pursuant to your Notice of Grant of Stock Options ("***Grant Notice***") and this Option Agreement, Molecular Templates, Inc. (the "***Company***") has granted you an option under its 2014 Equity Incentive Plan (the "***Plan***") to purchase the number of shares of the Company's Common Stock indicated in your Grant Notice at the exercise price indicated in your Grant Notice. The option is granted to you effective as of the date of grant set forth in the Grant Notice (the "***Date of Grant***"). This Option Agreement shall be deemed to be agreed to by the Company and you upon the electronic signing or electronically accepting by you of the Grant Notice. If there is any conflict between the terms in this Option Agreement and the Plan, the terms of the Plan will control. Capitalized terms not explicitly defined in this Option Agreement or in the Grant Notice but defined in the Plan will have the same definitions as in the Plan.

The details of your option, in addition to those set forth in the Grant Notice and the Plan, are as follows:

1. Vesting. Subject to the provisions contained herein, your option will vest as provided in your Grant Notice, subject to the potential acceleration described below in this Section 1. Vesting will cease upon the termination of your Continuous Service.

(a) *Fundamental Transaction.* The provisions of this Section 1(a) and not Section 9(c) of the Plan will apply to your option. In the event of a Fundamental Transaction while you remain a member of the Board who is not an employee of the Company or any parent or subsidiary of the Company (a "***Non-Employee Director***"), the shares subject to your option at such time will become automatically vested in full so that your option will, immediately prior to the effective date of the Fundamental Transaction, become exercisable for all of the shares of Common Stock subject to your option and may be exercised for any or all of such vested shares. Immediately following the consummation of the Fundamental Transaction, your option will terminate and cease to be outstanding, except to the extent assumed by the successor corporation (or Affiliate thereof). If your option is assumed in connection with the Fundamental Transaction it will be appropriately adjusted, immediately after such Fundamental Transaction, to apply to the number and class of securities which would have been issuable to you in consummation of such Fundamental Transaction had your option been exercised immediately prior to such Fundamental Transaction. Appropriate adjustments will also be made to the exercise price payable per share under your option, provided that the aggregate exercise price payable for such securities will remain the same. To the extent the actual holders of Common Stock receive cash consideration for their Common Stock in consummation of the Fundamental Transaction, the successor corporation may, in connection with the assumption of your outstanding option, substitute one or more shares of its own common stock with a fair market value equivalent to the cash consideration paid per share of Common Stock in such Fundamental Transaction.

(b) *Change in Control.* In the event of a Change in Control while you remain a Non-Employee Director, the shares of Common Stock at the time subject to your option that is outstanding, but not otherwise vested, will automatically vest in full so that your option will, immediately prior to the effective date of the Change in Control, become exercisable for all the shares of Common Stock subject to your option as fully vested shares and may be exercised for any or all of those vested shares. Your option will remain exercisable for such fully vested shares until the Expiration Date indicated in your Grant Notice or sooner termination of the option term in connection with a Change in Control.

2. Number of Shares and Exercise Price. The number of shares of Common Stock subject to your option and your exercise price per share in your Grant Notice will be adjusted for Capitalization Adjustments.

3. Exercise Restriction for Non-Exempt Employees. If you are an Employee eligible for overtime compensation under the Fair Labor Standards Act of 1938, as amended (that is, a "***Non-Exempt Employee***"), and except as otherwise provided in the Plan, you may not exercise your option until you have completed at least six (6) months of Continuous Service measured from the Date of Grant, even if you have already been an employee for more than six (6) months. Consistent with the provisions of the Worker Economic Opportunity Act, you may exercise your option as to any vested portion prior to such six (6) month anniversary in the case of (i) your death or disability, (ii) a Fundamental Transaction in which your option is not assumed, continued or substituted, (iii) a Change in Control or (iv) your termination of Continuous Service on your "retirement" (as defined in the Company's benefit plans).

4. Method of Payment. You must pay the full amount of the exercise price for the shares you wish to exercise. You may pay the exercise price as follows:

(a) In cash or by check, bank draft or money order payable to the Company.

(b) To the extent permitted by the Company, pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board that, prior to the issuance of Common Stock, results in either the receipt of cash (or check) by the Company or the receipt of irrevocable instructions to pay the aggregate exercise price to the Company from the sales proceeds. This manner of payment is also known as a "broker-assisted exercise", "same day sale", or "sell to cover".

(c) By delivery to the Company (either by actual delivery or attestation) of already-owned shares of Common Stock that are owned free and clear of any liens, claims, encumbrances or security interests, and that are valued at Fair Market Value on the date of exercise. "Delivery" for these purposes, in the sole discretion of the Company at the time you exercise your option, will include delivery to the Company of your attestation of ownership of such shares of Common Stock in a form approved by the Company. You may not exercise your option by delivery to the Company of Common Stock if doing so would violate the provisions of any law, regulation or agreement restricting the redemption of the Company's stock.

(d) If this option is a Nonstatutory Stock Option, subject to the consent of the Company at the time of exercise, by a "net exercise" arrangement pursuant to which the Company will reduce the number of shares of Common Stock issued upon exercise of your option by the largest whole number of shares with a Fair Market Value that does not exceed the aggregate exercise price. You must pay any remaining balance of the aggregate exercise price not satisfied by the "net exercise" in cash or other permitted form of payment. Shares of Common Stock will no longer be outstanding under your option and will not be exercisable thereafter if those shares (i) are used to pay the exercise price pursuant to the "net exercise," (ii) are delivered to you as a result of such exercise, and (iii) are withheld to satisfy tax withholding obligations.

5. Whole Shares. You may exercise your option only for whole shares of Common Stock.

6. Securities Law Compliance. In no event may you exercise your option unless the shares of Common Stock issuable upon such exercise are then registered under the Securities Act or, if not registered, the Company has determined that your exercise and the issuance of the shares would be exempt from the registration requirements of the Securities Act. The exercise of your option also must comply with all other applicable laws and regulations governing your option, and you may not exercise your option if the Company determines that such exercise would not be in material compliance with such laws and regulations (including any restrictions on exercise required for compliance with Treas. Reg. 1.401(k)-1(d)(3), if applicable).

7. Term. You may not exercise your option before the Date of Grant or after the expiration of the option's term. The term of your option expires, subject to the provisions of Section 5(h) of the Plan and the provisions of Section 1(a) of this Option Agreement, upon the earliest of the following:

(a) immediately upon the termination of your Continuous Service for Cause;

(b) three (3) months after the termination of your Continuous Service for any reason other than Cause, your Disability or your death (except as otherwise provided in Section 7(e) below); *provided, however,* that if during any part of such three (3) month period your option is not exercisable solely because of the condition set forth in the section above relating to "Securities Law Compliance," your option will not expire until the earlier of the Expiration Date or until it has been exercisable for an aggregate period of three (3) months after the termination of your Continuous Service; *provided further,* if during any part of such three (3) month period, the sale of any Common Stock received upon exercise of your option would violate the Company's insider trading policy, then your option will not expire until the earlier of the Expiration Date or until it has been exercisable for an aggregate period of three (3) months (that need not be consecutive) after the termination of your Continuous Service during which the sale of the Common Stock received upon exercise of your option would not be in violation of the Company's insider trading policy. Notwithstanding the foregoing, if (i) you are a Non-Exempt Employee, (ii) your Continuous Service terminates within six (6) months after the Date of Grant, and (iii) you have vested in a portion of your option at the time of your termination of Continuous Service, your option will not expire until the earlier of (x) the later of (A) the date that is seven (7) months after the Date of Grant, and (B) the date that is three (3) months (that

need not be consecutive) after the termination of your Continuous Service, and (y) the Expiration Date;

(c) three (3) months following the beginning of your leave of absence (other than a personal or medical leave of absence approved by an authorized representative of the Company with employment guaranteed upon return) (except as otherwise provided in Section 7(e) below);

(d) twelve (12) months after the termination of your Continuous Service due to your Disability (except as otherwise provided in Section 7(e)) below;

(e) eighteen (18) months after your death if you die either during your Continuous Service or within three (3) months after your Continuous Service terminates for any reason other than Cause;

(f) the Expiration Date indicated in your Grant Notice; or

(g) the day before the tenth (10th) anniversary of the Date of Grant.

If your option is an Incentive Stock Option, note that to obtain the federal income tax advantages associated with an Incentive Stock Option, the Code requires that at all times beginning on the Date of Grant and ending on the day three (3) months before the date of your option's exercise, you must be an employee of the Company or an Affiliate, except in the event of your death or Disability. The Company has provided for extended exercisability of your option under certain circumstances for your benefit but cannot guarantee that your option will necessarily be treated as an Incentive Stock Option if you continue to provide services to the Company or an Affiliate as a Consultant or Director after your employment terminates or if you otherwise exercise your option more than three (3) months after the date your employment with the Company or an Affiliate terminates.

8. Exercise.

(a) You may exercise the vested portion of your option during its term by delivering a Notice of Exercise (in a written or electronic form designated by the Company) or taking such other action as the Company may require together with delivering the exercise price and any applicable withholding taxes to the Company's Secretary or to such other person as the Company may designate (such as any broker designated by the Company to effect option exercises) during regular business hours, together with such additional documents as the Company may then require.

(b) By exercising your option you agree that, as a condition to any exercise of your option, the Company may require you to enter into an arrangement providing for the payment by you to the Company of any tax withholding obligation of the Company arising by reason of (i) the exercise of your option, (ii) the lapse of any substantial risk of forfeiture to which the shares of Common Stock are subject at the time of exercise, or (iii) the disposition of shares of Common Stock acquired upon such exercise.

(c) If your option is an Incentive Stock Option, by exercising your option you agree that you will notify the Company in writing within fifteen (15) days after the date of any disposition of any of the shares of the Common Stock issued upon exercise of your option that occurs within two (2) years after the Date of Grant or within one (1) year after such shares of Common Stock are transferred upon exercise of your option.

9. Transferability. Except as otherwise provided in this Section 9 , your option is not transferable, except by will or by the laws of descent and distribution, and is exercisable during your life only by you.

(a) Certain Trusts. Upon receiving written permission from the Board or its duly authorized designee, you may transfer your option to a trust if you are considered to be the sole beneficial owner (determined under Section 671 of the Code and applicable state law) while the option is held in the trust. You and the trustee must enter into transfer and other agreements required by the Company.

(b) Domestic Relations Orders. Upon receiving written permission from the Board or its duly authorized designee, and provided that you and the designated transferee enter into transfer and other agreements required by the Company, you may transfer your option pursuant to the terms of a domestic relations order, official marital settlement agreement or other divorce or separation instrument as permitted by Treasury Regulation 1.421-1(b)(2) that contains the information required by the Company to effectuate the transfer. You are encouraged to discuss the proposed terms of any division of this option with the Company prior to finalizing the domestic relations order or marital settlement agreement to help ensure the required information is contained within the domestic relations order or marital settlement agreement. If this option is an Incentive Stock Option, this option may be deemed to be a Nonstatutory Stock Option as a result of such transfer.

(c) Beneficiary Designation. Upon receiving written permission from the Board or its duly authorized designee, you may , by delivering written notice to the Company, in a form approved by the Company and any broker designated by the Company to handle option exercises, designate a third party who, on your death, will thereafter be entitled to exercise this option and receive the Common Stock or other consideration resulting from such exercise. In the absence of such a designation, your executor or administrator of your estate will be entitled to exercise this option and receive, on behalf of your estate, the Common Stock or other consideration resulting from such exercise.

(d) Lock-Up Period. You agree that in the event the Company proposes to offer for sale to the public any of its equity securities and you are requested by the Company and any underwriter engaged by the Company in connection with such offering to sign an agreement restricting the sale or other transfer of shares, then you will promptly sign such agreement and will not transfer, whether in privately negotiated transactions or to the public in open market transactions or otherwise, any shares or other securities of the Company held by you during such period as is determined by the Company and the underwriters, not to exceed 180 days following the closing of the offering, plus such additional period of time as may be required to comply with FINRA rules or similar rules thereto promulgated by another regulatory authority (such period, the "***Lock-Up Period***"). Such agreement shall be in writing and in form and substance

reasonably satisfactory to the Company and such underwriter and pursuant to customary and prevailing terms and conditions. Notwithstanding whether you have signed such an agreement, the Company may impose stop-transfer instructions with respect to the shares or other securities of the Company subject to the foregoing restrictions until the end of the Lock-Up Period.

(e) **No Duty to Disclose.** You acknowledge and agree that neither the Company, its stockholders nor its directors and officers, has any duty or obligation to disclose to you any material information regarding the business of the Company or affecting the value of the shares before, at the time of, or following a termination of your service by the Company, including, without limitation, any information concerning plans for the Company to make a public offering of its securities or to be acquired by or merged with or into another firm or entity.

10. Option not a Service Contract. Your option is not an employment or service contract, and nothing in your option will be deemed to create in any way whatsoever any obligation on your part to continue in the employ of the Company or an Affiliate, or of the Company or an Affiliate to continue your employment. In addition, nothing in your option will obligate the Company or an Affiliate, their respective stockholders, boards of directors, officers or employees to continue any relationship that you might have as a Director or Consultant for the Company or an Affiliate.

11. Withholding Obligations.

(a) At the time you exercise your option, in whole or in part, and at any time thereafter as requested by the Company, you hereby authorize withholding from payroll and any other amounts payable to you, and otherwise agree to make adequate provision for (including by means of a "same day sale" pursuant to a program developed under Regulation T as promulgated by the Federal Reserve Board to the extent permitted by the Company), any sums required to satisfy the federal, state, local and foreign tax withholding obligations of the Company or an Affiliate, if any, which arise in connection with the exercise of your option.

(b) If this option is a Nonstatutory Stock Option, then upon your request and subject to approval by the Company, and compliance with any applicable legal conditions or restrictions, the Company may withhold from fully vested shares of Common Stock otherwise issuable to you upon the exercise of your option a number of whole shares of Common Stock having a Fair Market Value, determined by the Company as of the date of exercise, not in excess of the minimum amount of tax required to be withheld by law (or such lower amount as may be necessary to avoid classification of your option as a liability for financial accounting purposes). If the date of determination of any tax withholding obligation is deferred to a date later than the date of exercise of your option, share withholding pursuant to the preceding sentence shall not be permitted unless you make a proper and timely election under Section 83(b) of the Code, covering the aggregate number of shares of Common Stock acquired upon such exercise with respect to which such determination is otherwise deferred, to accelerate the determination of such tax withholding obligation to the date of exercise of your option. Notwithstanding the filing of such election, shares of Common Stock shall be withheld solely from fully vested shares of Common Stock determined as of the date of exercise of your option that are otherwise issuable to you upon such exercise. Any adverse consequences to you arising in connection with such share withholding procedure shall be your sole responsibility.

(c) You may not exercise your option unless the tax withholding obligations of the Company and/or any Affiliate are satisfied. Accordingly, you may not be able to exercise your option when desired even though your option is vested, and the Company will have no obligation to issue a certificate for such shares of Common Stock or release such shares of Common Stock from any escrow provided for herein, if applicable, unless such obligations are satisfied.

12. **Tax Consequences**. You hereby agree that the Company does not have a duty to design or administer the Plan or its other compensation programs in a manner that minimizes your tax liabilities. You will not make any claim against the Company, or any of its Officers, Directors, Employees or Affiliates related to tax liabilities arising from your option or your other compensation. In particular, you acknowledge that this option is exempt from Section 409A of the Code only if the exercise price per share specified in the Grant Notice is at least equal to the "fair market value" per share of the Common Stock on the Date of Grant and there is no other impermissible deferral of compensation associated with the option.

13. **Notices.** Any notices provided for in your option or the Plan will be given in writing (including electronically) and will be deemed effectively given upon receipt or, in the case of notices delivered by mail by the Company to you, five (5) days after deposit in the United States mail, postage prepaid, addressed to you at the last address you provided to the Company. The Company may, in its sole discretion, decide to deliver any documents related to participation in the Plan and this option by electronic means or to request your consent to participate in the Plan by electronic means. By accepting this option, you consent to receive such documents by electronic delivery and to participate in the Plan through an on-line or electronic system established and maintained by the Company or another third party designated by the Company.

14. **Governing Plan Document.** Your option is subject to all the provisions of the Plan, the provisions of which are hereby made a part of your option, and is further subject to all interpretations, amendments, rules and regulations, which may from time to time be promulgated and adopted pursuant to the Plan. If there is any conflict between the provisions of your option and those of the Plan, the provisions of the Plan will control. In addition, your option (and any compensation paid or shares issued under your option) is subject to recoupment in accordance with The Dodd–Frank Wall Street Reform and Consumer Protection Act and any implementing regulations thereunder, any clawback policy adopted by the Company and any compensation recovery policy otherwise required by applicable law.

15. **Other Documents.** You hereby acknowledge receipt of and the right to receive a document providing the information required by Rule 428(b)(1) promulgated under the Securities Act, which includes the Plan prospectus. In addition, you acknowledge receipt of the Company's policy permitting certain individuals to sell shares only during certain "window" periods and the Company's insider trading policy, in effect from time to time.

16. **Governing Law.** This Option Agreement shall be governed by and construed in accordance with the laws of the State of Delaware, without giving effect to the conflict of law principles thereof. For the purpose of litigating any dispute that arises under this Agreement, the parties hereby consent to exclusive jurisdiction in Texas and agree that such litigation shall be

conducted in the state courts in the count of Austin, Texas or the federal courts of the United States for the Western District of Texas.

17. Data Privacy. By entering into this Agreement, the Participant: (i) authorizes the Company and each Affiliate, and any agent of the Company or any Affiliate administering the Plan or providing Plan recordkeeping services, to disclose to the Company or any of its Affiliates such information and data as the Company or any such Affiliate shall request in order to facilitate the grant of options and the administration of the Plan; and (ii) authorizes the Company and each Affiliate to store and transmit such information in electronic form for the purposes set forth in this Agreement.

18. Effect on Other Employee Benefit Plans. The value of this option will not be included as compensation, earnings, salaries, or other similar terms used when calculating your benefits under any employee benefit plan sponsored by the Company or any Affiliate, except as such plan otherwise expressly provides. The Company expressly reserves its rights to amend, modify, or terminate any of the Company's or any Affiliate's employee benefit plans.

19. Voting Rights. You will not have voting or any other rights as a stockholder of the Company with respect to the shares to be issued pursuant to this option until such shares are issued to you. Upon such issuance, you will obtain full voting and other rights as a stockholder of the Company. Nothing contained in this option, and no action taken pursuant to its provisions, will create or be construed to create a trust of any kind or a fiduciary relationship between you and the Company or any other person.

20. Severability. If all or any part of this Option Agreement or the Plan is declared by any court or governmental authority to be unlawful or invalid, such unlawfulness or invalidity will not invalidate any portion of this Option Agreement or the Plan not declared to be unlawful or invalid. Any Section of this Option Agreement (or part of such a Section) so declared to be unlawful or invalid shall, if possible, be construed in a manner which will give effect to the terms of such Section or part of a Section to the fullest extent possible while remaining lawful and valid.

21. Miscellaneous.

(a) The rights and obligations of the Company under your option will be transferable to any one or more persons or entities, and all covenants and agreements hereunder will inure to the benefit of, and be enforceable by the Company's successors and assigns.

(b) You agree upon request to execute any further documents or instruments necessary or desirable in the sole determination of the Company to carry out the purposes or intent of your option.

(c) You acknowledge and agree that you have reviewed your option in its entirety, have had an opportunity to obtain the advice of counsel prior to executing and accepting your option, and fully understand all provisions of your option.

(d) This Option Agreement will be subject to all applicable laws, rules, and regulations, and to such approvals by any governmental agencies or national securities exchanges as may be required.

(e) All obligations of the Company under the Plan and this Option Agreement will be binding on any successor to the Company, whether the existence of such successor is the result of a direct or indirect purchase, merger, consolidation, or otherwise, of all or substantially all of the business and/or assets of the Company.

* **

This Option Agreement will be deemed to be signed by you upon the signing by you of the Notice of Grant of Stock Options to which it is attached.

November 3, 2017

Adam D. Cutler 845
Claflin Ave
Mamaroneck, NY 10543

Dear Adam,
On behalf of Molecular Templates, Inc. ("MTEM" or the "Company"), I am pleased to offer you ("you" or the "Executive") the position of Chief Financial Officer, reporting directly to me.

Total Rewards

Annual Salary

Your salary will be paid at the rate of $31,666.67 per month ($380,000.00 annualized) less payroll deductions and all required withholdings. Your salary will be paid in 24 installments annually or under such similar payroll procedure.

Target Bonus

You will be eligible to receive a target discretionary annual bonus of 35% of your base salary. Actual bonus awards may be above or below the targeted amount based on the Company's performance and your individual performance, subject to MTEM's policy for paying annual bonuses set forth in MTEM's Employee Handbook, as may be amended from time to time. Your 2017 bonus, if any, will be prorated based on your start date of November 13, 2017.

Whether the Company awards bonuses for any given year, the allocation of the bonuses for Company and individual performance, and the amounts of such bonuses, if awarded, will be in the sole discretion of the Company as determined by its Compensation Committee of the Board of Directors (the "Committee"). If the Committee approves payment of bonuses for any given year, the bonus amounts generally will be determined and paid within the first calendar quarter of the year based on the prior year's performance. To incentivize you to remain employed with MTEM, you must be employed on the date any bonus is paid in order to earn the bonus. If your employment terminates for any reason prior to the payment of the

bonus, then you will not have earned the bonus and will not receive any portion of it. Notwithstanding the foregoing, if MTEM terminates your employment without "Cause" (as defined in MTEM's 2014 Equity Incentive Plan) after the close of the fiscal year and prior to payment of the bonus, the Company will pay you any bonus awarded by the Compensation Committee on or before March 15.

Equity Incentives

Subject to approval by the Committee, you will be granted an initial new hire option to purchase 225,000 shares of the Company's common stock, subject to the terms and conditions of MTEM's 2014 Equity Incentive Plan and a stock option grant notice and agreement that will be provided to you. The grant agreement will include a four (4) year vesting schedule, such that 25% of the shares will vest on the first anniversary of the commencement of your employment, with the balance vesting in equal monthly installments over the subsequent thirty-six (36) months, until either your option shares are fully vested or your employment ends, whichever occurs first. The stock option award vesting is subject to acceleration in certain circumstances following a Change in Control, as set forth below under "Termination Without Cause in Connection With a Change in Control". In the event that your employment is terminated by MTEM Without Cause or by you for Good Reason (as defined below under "Good Reason Definition"), any unvested portion of the stock options as well as any other option or equity award subsequently granted under any applicable equity incentive plan of MTEM shall vest in full and MTEM's right to repurchase, if any, shall lapse in its entirety.

Annually, you will be eligible to participate in any long-term incentive plan in effect at a level commensurate with your position and role with MTEM under such plan's terms and conditions.

Benefits

You will be eligible to receive MTEM's complete package of wellness and insurance benefits. MTEM may, in its sole discretion, discontinue or modify any such plans, programs or practices at any time, with or without notice. Details about these benefit plans will be made available for your review.

Paid Time Off

Vacation. You are eligible for three weeks of paid vacation during each fiscal year at times that are mutually convenient for you and the Company.

Holidays. You are eligible for paid holidays. These holidays are listed in our employee handbook.

At-Will Employment; Termination; Severance

Acknowledgement. Your employment with MTEM is "at will," which means you may terminate your employment with the Company at any time and for any reason whatsoever simply by notifying MTEM, and likewise, MTEM may terminate your employment at any time and for any reason whatsoever, with or without cause or advance notice. This at-will employment relationship cannot be changed except in a writing signed by a Company officer.

Termination in General. In the event your employment with MTEM terminates for any reason, you will receive (i) your base salary through the date of termination; (ii) reimbursement of all expenses for which you are entitled to be reimbursed, but for which you have not yet been reimbursed; and (iii) if you participate in MTEM's group health plans, the right to continue health care benefits under COBRA, at your cost, to the extent required and available by law.

Termination Without Cause or for Good Reason. In the event MTEM terminates your employment without "Cause" (as defined in MTEM's 2014 Equity Incentive Plan) or you terminate your employment for Good Reason (as defined and described below under "Good Reason Definition"), in addition to (i), (ii) and (iii) above, provided you execute, deliver to MTEM and do not revoke a separation agreement and general release, with terms reasonably requested by MTEM in a form substantially similar to other separation agreements entered into by MTEM, within 60 days following your last date of employment, the Company will pay you severance pay at a rate equal to 100% of your base salary, (less applicable withholding), for a period of nine months from the date of such termination, plus the annual target bonus amount that you are eligible to earn for the year in which termination or resignation occurs, prorated based on the number of days of employment in such year, to be paid periodically in accordance with MTEM's normal payroll practices, and MTEM will pay or, at your option, reimburse your COBRA premiums for a period of nine months commencing on the first date in which you lose health care coverage under MTEM's health plans as a result of your termination from employment with MTEM, provided that you timely elect COBRA coverage. Payments will commence on the next payroll period following the date the separation agreement becomes enforceable, provided that if the 60-day period to sign the separation agreement extends into the following calendar year, the payments will begin in the new calendar year. The first payment will

include all amounts due to you under this paragraph through that date. In addition, any unvested portion of your stock options and any other option or equity award subsequently granted under any applicable equity incentive plan of MTEM shall vest in full and MTEM's right to repurchase, if any, shall lapse in its entirety.

Termination Without Cause in Connection With a Change in Control. In the event that a Change in Control (as defined in MTEM's 2014 Equity Incentive Plan) occurs during your employment with us and MTEM terminates your employment without Cause (as defined in MTEM's 2014 Equity Incentive Plan) three months prior to or twelve months after the Change in Control, provided you execute, deliver to MTEM and do not revoke a separation agreement and general release, with terms reasonable requested by MTEM in a form substantially similar to other separation agreements entered into by MTEM, within 60 days following your last date of employment, the Company will (i) pay you in lieu of the severance benefit described in the preceding paragraph, a lump sum amount equal to one times (1x) the sum of your current base salary and your annual target bonus, and (ii) accelerate your vesting in all Company time-based equity awards that you then hold. All stock options then held by you shall immediately become exercisable in full and any other stock awards held by you will become free of restrictions. MTEM will pay you the lump sum severance payment on the next payroll period following the date the separation agreement becomes enforceable, provided that if the 60-day period to sign the separation agreement extends into the following calendar year, the lump sum payment will be made in the new calendar year.

Good Reason. For purposes of this Agreement, "Good Reason" shall mean, without Executive's written consent:

(i) there is a material reduction in Executive's Base Salary (except where there is a general reduction applicable to the management team generally),

(ii) there is a material reduction in Executive's overall responsibilities or authority, title, reporting relationships, or scope of duties;

(iii) there is a requirement by the Company that Executive perform an act or not perform an act that Executive reasonably believes violates a law, rule or regulation or constitutes fraud or violates a clear mandate of public policy or clear principle of professional ethics or

(iv) there is a failure by the Company to comply with any of the provisions of this letter or to pay or award any sums or awards due under this letter

(v) there is a material change in the geographic location at which Executive must perform his services; provided, that in no instance will the relocation of Executive to a facility or a location of thirty (30) miles or less from Executive's then current office location be deemed material for purposes of this Agreement.

Termination for Good Reason is established for purposes of this letter by you providing the Company with written notice of the acts or omissions constituting the grounds for Good Reason within ninety (90) days of you becoming aware of those grounds and a reasonable opportunity for the Company to cure the conditions giving rise to such Good Reason, which shall not be more than thirty (30) days following the date of receipt of such written notice from Executive. If the Company cures the conditions giving rise to such Good Reason within thirty (30) days of the date of receipt of such notice, you will not be entitled to severance payments and/or benefits contemplated by Termination for Good Reason if you thereafter resign from the Company based on such grounds.

Section 280G.

If any payment or benefit Executive would receive under this letter, when combined with any other payment or benefit Executive receives pursuant to a Change in Control (for purposes of this section, a "Payment") would: (i) constitute a "parachute payment" within the meaning of Section 280G of the Internal Revenue Code of 1986, as amended (the "Code"); and (ii) but for this sentence, be subject to the excise tax imposed by Section 4999 of the Code (the "Excise Tax"), then such Payment shall be either: (A) the full amount of such Payment; or (B) such lesser amount (with cash payments being reduced before stock option compensation) as would result in no portion of the Payment being subject to the Excise Tax, whichever of the foregoing amounts, taking into account the applicable federal, state and local employments taxes, income taxes, and the Excise Tax, results in Executive's receipt, on an after-tax basis, of the greater amount of the Payment notwithstanding that all or some portion of the Payment may be subject to the Excise Tax.

Section 409A.

(a) In the event that the payments or benefits upon termination as set forth in this letter constitute "non-qualified deferred compensation" subject to Section 409A, then the following conditions apply to such payments or benefits:

(i) Any termination of Executive's employment triggering payment of benefits pursuant to this letter must constitute a "separation from service" under Section 409A before distribution of such benefits can commence. To the extent that the termination of Executive's employment does not constitute a separation of service under Section 409A, as the result of further services that are reasonably anticipated to be provided by Executive to Company at the time Executive's

employment terminates, any such payments pursuant to this letter that constitute deferred compensation under Section 409A shall be delayed until after the date of a subsequent event constituting a separation of service under Section 409A. For purposes of clarification, this section shall not cause any forfeiture of benefits on Executive's part, but shall only act as a delay until such time as a "separation from service" occurs.

(ii) Notwithstanding any other provision with respect to the timing of payments pursuant to this letter if, at the time of Executive's termination, Executive is deemed to be a "specified employee" of Company within the meaning of Section 409A(a), then limited only to the extent necessary to comply with the requirements of Section 409A, any payments to which Executive may become entitled pursuant to this letter which are subject to Section 409A (and not otherwise exempt from its application) shall be withheld until the first (1st) business day of the seventh (7th) month following the termination of Executive's employment, at which time Executive shall be paid an aggregate amount equal to the accumulated, but unpaid, payments otherwise due to Executive under the terms of this letter.

(b) It is intended that each installment of the payments and benefits provided pursuant to this letter shall be treated as a separate "payment" for purposes of Section 409A. Neither Company nor Executive shall have the right to accelerate or defer the delivery of any such payments or benefits except to the extent specifically permitted or required by Section 409A.

(c) Notwithstanding any other provision of this letter to the contrary, this letter shall be interpreted and at all times administered in a manner that avoids the inclusion of compensation in income under Section 409A, or the payment of increased taxes, excise taxes or other penalties under Section 409A. The parties intend this letter to be in compliance with Section 409A. Executive acknowledges and agrees that Company does not guarantee the tax treatment or tax consequences associated with any payment or benefit arising under this letter, including but not limited to consequences relatedto Section 409A.

Confidentiality

As a MTEM employee, you will be expected to abide by Company rules and regulations and sign and comply with the Company's Proprietary Information and Inventions Agreement which prohibits unauthorized use or disclosure of company

proprietary information.

In your work for the Company, you will be expected not to use or disclose any confidential information, including trade secrets, of any former employer or other person to whom you have an obligation of confidentiality. Rather, you will be expected to use only that information which is generally known and used by persons with training and experience comparable to your own, which is common knowledge in the industry or otherwise legally in the public domain, or which is otherwise provided or developed by the Company.

You agree that you will not bring onto Company premises any unpublished documents or property belonging to any former employer or other person to whom you have an obligation of confidentiality.

You represent that you are not a party to any agreement that would prohibit you from entering into employment with the Company and have otherwise brought to the Company's attention any agreement that purports to restrict the activities in which you can engage on behalf of the Company.

This letter, together with the Proprietary Information and Inventions Agreement, forms the complete and exclusive statement of your agreement with MTEM. The terms in this letter supersede any other agreements or promises made to you by anyone, whether oral or written. Changes in your agreement terms, other than those changes expressly reserved to the Company's discretion in this letter, require a written modification signed by an officer of the Company. As required by law, this offer is subject to satisfactory proof of your right to work in the United States of America.

The Company reserves the right to conduct background investigations and/or reference checks on all of its potential employees. Your employment offer, therefore, is contingent upon a clearance of such a background investigation and/or reference check, if any.

The terms of this letter are governed by the laws of New Jersey without regard to its or any other state's conflict of law rules.

Please sign and date this letter and return it to the Company by November 7, 2017, if you wish to accept employment at MTEM under the terms described above.

We welcome you to the Molecular Templates team and look forward to your contribution to our success.

/s/ Eric Poma, PhD {MTEM Supervisor)
Eric Poma, PhD
Chief Executive Officer & Chief Scientific Officer
Accepted:

Date:

Exhibit 10.17.1

Second Amendment To Lease

This **Second Amendment To Lease** ("**Amendment**") is dated as of this 29th day of March, 2017 (the "**Execution Date**"), by and between **NW AUSTIN OFFICE PARTNERS LLC,** a Delaware limited liability company ("**Landlord**"), and **MOLECULAR TEMPLATES, INC.**, a Delaware corporation ("**Tenant**").

RECITALS:

A. Landlord and Tenant entered into that certain Lease ("**Initial Lease**") dated as of October 1, 2016, as amended by that certain First Amendment to Lease ("**First Amendment**"), dated as of January 30, 2017 (the Initial Lease as amended by the First Amendment, the "**Original Lease**"), whereby Landlord agreed to lease to Tenant certain space in the building with a street address of 9301 Amberglen Boulevard, Austin, Texas, also known as Building J (the "**Building**").

B. By this Amendment, Landlord and Tenant desire to modify the Original Lease as provided herein.

C. Unless otherwise defined herein, capitalized terms as used herein shall have the same meanings as given thereto in the Original Lease.

NOW, THEREFORE, in consideration of the foregoing recitals and the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

AGREEMENT:

1. Effectiveness. This Amendment (and all Lease modifications pursuant hereto contained in Section 2 below) shall be effective on the date (the "**Effective Date**") Tenant receives $30,000,000.00 or more in the aggregate in additional funding following the date hereof from whatever source (whether via new equity or debt, including without limitation convertible or mezzanine debt, but excluding any grant funding from CPRIT) (such event, the "**Tenant Capitalization**") on or before June 23, 2017 (the "**Outside Date**"). Funding shall be considered to have been "received" by Tenant if the full amount of the funds were actually disbursed to Tenant, or if a closing with a funding source has occurred which permits Tenant to demand disbursement of the funds following the Outside Date without material prerequisites for disbursement. Tenant shall provide Landlord with reasonable evidence of the amount of additional funding raised by Tenant upon Landlord's reasonable request from time to time prior to the Outside Date. If the Tenant Capitalization has not occurred on or before the Outside Date, then this Amendment shall thereinafter be automatically deemed null and void without the need for further amendment or written instrument. Notwithstanding the foregoing, Tenant shall have the right to waive the Tenant Capitalization condition to effectiveness of this Amendment by written notice to Landlord (the "**Waiver Notice**") delivered on or before the Outside Date. Upon delivery of the Waiver Notice, this Amendment shall be fully effective regardless of whether Tenant Capitalization has occurred on or before the Outside Date and the date upon which Tenant delivers the Waiver Notice shall be the Effective Date. If requested by either party, the parties shall execute a certificate memorializing the Effective Date within ten (10) business days of such party's request, but the effectiveness of this Amendment shall be fully effective upon the Tenant Capitalization or delivery of the Waiver Notice, as the case may be, whether or not such certificate is executed or delivered.

2. Amendments to the Lease. Effective if and only if the Effective Date occurs:

A. The Expansion of the Leased Premises. Pursuant to the Original Lease, Landlord has agreed to lease to Tenant that certain office space containing approximately 22,382 rentable square feet located on the first (1st) floor of the Building (collectively, the "**Existing Premises**"). Tenant shall, in addition to the Existing Premises, also lease that certain space located on the first (1st) floor of the Building, consisting of approximately 10,765 rentable square feet, as shown on the floor plan attached hereto as Exhibit A and made a part hereof, hereinafter referred to as the "**Second Expansion Space**," for a total aggregate square footage of 33,147 rentable square feet. The Second Expansion Space shall be leased by Tenant on all the same terms and conditions set forth in the Original Lease, as amended by this Amendment, effective as of the Lease Commencement Date. Without limitation, the Leased Premises (including the Second Expansion Space) are being delivered to Tenant vacant and broom cleaned and otherwise in their AS IS condition, WITH ALL FAULTS, in accordance with, and subject to, Paragraph 2.4 of the Lease. Notwithstanding the foregoing, Landlord shall cause the baseboard in the Second Expansion Space to be installed in a good and workmanlike manner prior to the later of the Lease Commencement Date or thirty (30) days after the Effective Date. Effective as of the Effective Date, all references to the "**Leased Premises**" in the Lease shall mean and refer to the Existing Premises as expanded by the Second Expansion Space. Notwithstanding anything to the contrary contained in the Original Lease or this Amendment, however, Tenant hereby acknowledges and agrees that the Second Expansion Space is currently subject to that certain Lease between Landlord and Zimmer Holdings, Inc. ("**Zimmer**"), as tenant, dated as of October 19, 2006, as amended, supplemented and otherwise modified, and Tenant's rights in or access to the Second Expansion Space pursuant to this Amendment shall commence on June 1, 2017. Further, for the avoidance of doubt, Landlord has not made any representations or promises with respect to, nor has Landlord agreed to deliver, any unattached, moveable partitions, trade fixtures, moveable equipment or furniture, lab equipment fixtures or improvements currently located in the Leased Premises which may be removed without structural damage to the Building or Leased Premises (collectively, the "**Removables**"). Landlord shall have no obligation to ensure that such Removables located within the Second Expansion Space shall be removed or remain.

B. Extension of the Lease Term. Notwithstanding anything to the contrary contained in the Original Lease, the Lease Term shall be increased to seventy-two (72) months, and the Lease Expiration Date shall be May 31, 2023 with respect to the entire Leased Premises. All references to "**Term**" in the Lease and this Agreement shall be deemed references to the Term, as extended by this Amendment.

C. Base Monthly Rent. Attached hereto as Exhibit B is a consolidated rent schedule showing the Base Monthly Rent payable for all of the Leased Premises leased by Tenant throughout the Lease Term, which the parties agree is accurate, complete and, effective as of the Effective Date, shall supersede the Base Monthly Rent schedule set forth in Section 4 of the First Amendment. Tenant shall pay to Landlord, on or before the Lease Commencement Date, the first installment of Monthly Base Rent and Additional Rent for the Second Expansion Space in an amount of $27,769.47 as prepayment of rent for credit against the first installment of Base Monthly Rent and Additional Rent due under the Lease (comprised of $17,807.10 in Base Monthly Rent and $9,962.37 in Additional Rent). Except as amended herein, Rent for the Leased Premises shall otherwise to be payable in accordance with the provisions of the Original Lease.

D. Rental Abatement. Section 5 of the First Amendment is hereby deleted. Notwithstanding anything to the contrary contained in Section 2(C) above, and provided that Tenant is not in default, beyond applicable periods of notice and grace, of its monetary and material non-monetary obligations under the Lease, and in addition to the abatement provided in the Initial Lease as such abatement is amended below by this Amendment with respect to the portion of the Lease Premises initially demised thereunder, Landlord agrees to abate Tenant's obligation to pay Base Monthly Rent for the Second Expansion Space and the Expansion Space (as defined in the First Amendment) for the initial seven (7) full months of the Lease

Term. Further, Landlord agrees to abate Tenant's obligation to pay Base Monthly Rent for the entirety of the Leased Premises during the eighth (8th) full calendar month of the Lease Term. However, notwithstanding anything to the contrary contained in the Original Lease, during the Base Rent Abatement Period (defined below), Tenant shall still be responsible for the payment of all of its other monetary obligations under the Lease. If a default by Tenant under the Lease results in early termination of the Lease, then as a part of the recovery permitted by the Lease, Landlord shall be entitled to the recovery of the Base Monthly Rent that was abated during the initial four (4) full months of the Lease Term.

The second paragraph of Paragraph 3.1(a) of the Initial Lease is hereby deleted and replaced in its entirety with the below:

"Base Monthly Rent for the Leased Premises described in the Initial Lease is payable at a reduced rate during the first twelve (12) full calendar months of the Lease Term (the "**Base Rent Abatement Period**"), as if such premises contained only 12,000 rentable square feet, and no Base Monthly Rent is payable for the Leased Premises described in the Initial Lease with respect to the eighth (8th) month of the Lease Term. Base Monthly Rent for the Expansion Space and Second Expansion Space is not payable during the initial eight (8) full months of the Lease Term. Notwithstanding anything to the contrary contained in this Lease, Landlord shall have the option (the "**Lump Sum Payment Option**") to require Tenant to pay Base Monthly Rent for so much of the Base Rent Abatement Period as remains following Landlord's notice as hereinafter provided at the rate of $53,133.33 per month, beginning on the date (the "**Base Monthly Rent Start Date**") set forth in the Lump Sum Payment Option Notice (defined below), which shall in no event be a date prior to payment to Tenant of the Abated Rent Lump Sum Payment. To exercise the Lump Sum Payment Option, Landlord must (i) provide written notice to Tenant of such exercise (the "**Lump Sum Payment Option Notice**") and (ii) pay to Tenant an amount (the "**Abated Rent Lump Sum Payment**") equal to the sum of (i) Base Monthly Rent that would be payable for the remaining Base Rent Abatement Period at the rate of $53,133.33 per month, less (ii) the Base Monthly Rent that was otherwise payable by Tenant pursuant to the Lease during the Base Rent Abatement Period. By way of example, if Landlord delivers the Lump Sum Payment Option Notice prior to November 1, 2017, with respect to the calendar month November 2017 (the sixth full calendar month of the Lease Term which month falls within the Base Rent Abatement Period), Landlord would pay Tenant, for such month the amount of (i) $53,133.33 less (ii) $18,750 (which represents the Base Rent which would have been payable for the entirety of the Leased Premises in the event Landlord had not delivered the Lump Sum Payment Option Notice, as provided on Exhibit B to the Second Amendment to Lease), and (y) the calendar month February 2018 (the ninth full calendar month of the Lease Term which month falls within the Base Rent Abatement Period), Landlord would pay Tenant, for such month in the amount of (i) $53,133.33 less (ii) (42,958.73). (which represents the Base Rent which would have been payable for the entirety of the Leased Premises in the event Landlord had not delivered the Lump Sum Payment Option Notice, as provided on Exhibit B to the Second Amendment to Lease). If Landlord elects its Lump Sum Payment Option, the Abated Rent Lump Sum Payment shall be made, at Landlord's election (a) within thirty (30) days of Tenant's receipt of the Lump Sum Payment Option Notice, or (b) on the closing date of any financing or sale of the Building by Landlord (the date of such payment is hereinafter referred to as the "**Lump Sum Payment Date**"), but, in either event, not later than the Base Monthly Rent Start Date. If Landlord fails to pay the Abated Rent Lump Sum Payment by the Lump Sum Payment Date or the financing or sale transaction for the Building, if applicable, expires or is terminated or deemed null and void for any reason, Landlord's exercise of the Lump Sum Payment Option shall be deemed null and void and of no further force or effect and the

Abated Rent Lump Sum Payment, if theretofore paid by Landlord to Tenant, shall promptly be returned by Tenant to Landlord. If the Base Monthly Rent Start Date is on a day other than the first day of a calendar month and Landlord has then paid the Abated Rent Lump Sum Payment, then Tenant shall pay any Base Monthly Rent payable hereunder for the period from the Base Monthly Rent Start Date through the last day of such calendar month (less any amounts paid previously paid by Tenant on account of such period), with the next installment of Base Monthly Rent due for the calendar month following the month in which such Lump Sum Payment Notice is effective."

The schedule contained in Section 5 of Exhibit E to the Initial Lease is hereby deleted in its entirety and replaced with the following:

Period	Base Monthly Rent
Months **-12	$53,133.33
Months 13-24	$54,514.85
Months 25-36	$55,895.98
Months 37-48	$57,662.77
Months 49-60	$59,043.90
Months 61-72	$60,425.02

E. Tenant's Pro Rata Share. "Tenant's Building Share" is hereby amended to be 65.54%, and "Tenant's Project Share" is hereby amended to be 6.10%, subject in each case to adjustment in accordance with Article I of the Lease.

F. Security Deposit.

i. Section 7 of the First Amendment is hereby deleted in its entirety.

ii. Notwithstanding anything to the contrary contained in the Original Lease, on or before the Commencement Date, Tenant shall deliver to Landlord: (i) a substitute or replacement Letter of Credit in the amount of Two Hundred Sixty Eight Thousand Fifty-Eight and 20/100 Dollars ($268,058.20), in the form and as required under the Lease, or (ii) an amendment to the Letter of Credit (the "**Original Letter of Credit**") delivered with respect to Leased Premises at the time of execution of the Initial Lease pursuant to which the maximum amount available under said letter of credit, as so amended, is increased to Two Hundred Sixty Eight Thousand Fifty-Eight and 20/100 Dollars ($268,058.20), or (iii) One Hundred Twenty Two Thousand Three Hundred Sixty Eight and 76/100 Dollars ($122,368.76), in cash, immediately available funds, or letter of credit form in accordance with the Lease, to be held by Landlord, together with the previous amounts delivered as the Security Deposit, as the Security Deposit. From and after the delivery of the foregoing, the term "Security Deposit" as used in the Lease shall mean Two Hundred Sixty Eight Thousand Fifty-Eight and 20/100 Dollars ($268,058.20). Furthermore, in the last paragraph of Paragraph 3.7 in the Initial Lease, (i) the "$48,563.15" amount is hereby amended and replaced with "$89,352.67," and (ii) the "$10,000,000" amount is hereby amended and replaced with "$30,000,000.00." In the event that Tenant elects to deliver a substitute or replacement Letter of Credit pursuant to clause (i) above, Landlord shall cooperate and coordinate the concurrent return of the Original Letter of Credit to Tenant or the issuing bank, as the case may be, in accordance with the instructions of the issuing bank. Notwithstanding anything to the contrary set forth in this Subsection F(ii), if the Effective Date occurs as a result of Tenant's Capitalization, the Security Deposit shall be $89,352.68 as of the Effective Date and Landlord shall either accept an amended Letter of Credit to reflect the reduced amount, or simultaneously return the Letter of Credit to Tenant upon receipt of a replacement Letter of Credit in the reduced amount or promptly return to Tenant the remaining balance of the cash Security Deposit.

G. Termination Right and Payment. Section 8 of the First Amendment is hereby deleted in its entirety and Article 17 of the Initial Lease is hereby deleted in its entirety.

H. Tenant Improvement Allowance. The term "Tenant Improvement Allowance," as defined in the Work Letter and amended by Section 3 of the First Amendment, is hereby revised to mean "$165,735.00" (based upon $5.00 per rentable square foot of the Leased Premises) solely for the costs relating to the Improvement Work and Tenant Improvements and as otherwise set forth in the Initial Lease. Furthermore, (i) the "$5,595.50" amount in the last full sentence of Paragraph 2(a) in the Work Letter (as amended by Section 3 of the First Amendment), is hereby amended and replaced with "$8,286.75" and (ii) the "$2,238.20" amount in the last paragraph of Paragraph 2 of the Initial Lease, as amended by Section 3 of the First Amendment, is hereby amended and replaced with "$3,314.70." Other than the Tenant Improvement Allowance provided herein, and except to the extent expressly provided in the Original Lease, Landlord shall not be responsible for the payment or performance of any improvements or alterations to the Leased Premises and, except to the extent expressly provided in the Original Lease, Tenant agrees to accept the same (including the Second Expansion Space) in their "as is" condition as of the Lease Commencement Date.

J. Generator, RO/DI System, and Chiller. Tenant shall continue to have the right to use the Generator in accordance with Paragraph 5.2(f) of the Initial Lease, but Landlord shall have no obligation to perform the work contemplated by the first sentence of such Paragraph 5.2(f), nor shall Tenant have any obligation to reimburse Landlord for such work. Similarly, Landlord shall have no obligation to perform the work contemplated by the fourth sentence of Paragraph 5.2(g) of the Initial Lease with respect to the RO/DI System and Chiller System, nor shall Tenant have any obligation to reimburse Landlord for costs of work contemplated by such fourth sentence of Paragraph 5.2(g). Tenant shall continue to have the right to use the RO/DI System and Chiller System in accordance with Paragraph 5.2(g) of the Initial Lease.

3. Broker. Landlord and Tenant each represents, warrants and agrees to the other that it has not had any dealings with any real estate broker(s), leasing agent(s), finder(s) or salesmen, other than Landlord's Broker and Tenant's Broker, respectively, in negotiating or consummating this Amendment. Landlord and Tenant each agrees to indemnify, defend with competent counsel, and hold the other harmless from and against any claim for commission or finder's fee by any person or entity who claims or alleges that they were retained or engaged by it or at its request in connection with this Amendment, other than Landlord's Broker and Tenant's Broker. Landlord shall pay any commission or fee due to Tenant's Broker in connection with this Amendment.

4. Tenant Representations. Each person executing this Amendment on behalf of Tenant represents and warrants to Landlord that: (a) Tenant is properly formed and validly existing under the laws of the state in which Tenant is formed and Tenant is authorized to transact business in the state in which the Building is located; (b) Tenant has full right and authority to enter into this Amendment and to perform all of Tenant's obligations hereunder; and (c) each person (and both persons if more than one signs) signing this Amendment on behalf of Tenant is duly and validly authorized to do so.

5. Defaults. Tenant hereby represents and warrants to Landlord that, to the knowledge of Tenant, as of the date of this Amendment, Landlord and Tenant are in full compliance with all terms, covenants and conditions of the Lease and that there are no breaches or defaults under the Lease by Landlord or Tenant, and that Tenant does not know of any event or circumstance which, given the passage of time, would constitute a default under the Lease by either Landlord or Tenant.

Landlord hereby represents and warrants to Tenant that, to the knowledge of Landlord, as of the date of this Amendment, Landlord and Tenant are in full compliance with all terms, covenants and conditions of the Lease and that there are no breaches or defaults under the Lease by Landlord or Tenant,

and that Landlord does not know of any event or circumstance which, given the passage of time, would constitute a default under the Lease by either Landlord or Tenant.

6. No Further Modification. Except as set forth in this Amendment, all of the terms and provisions of the Lease shall apply with respect to the Leased Premises (including the Second Expansion Space) and shall remain unmodified and in full force and effect.

7. Counterparts and Electronic Signatures. This Amendment may be executed in counterparts, each of which shall be deemed an original, but such counterparts, when taken together, shall constitute one agreement. This Amendment may be executed by a party's signature transmitted by electronic means, and copies of this Amendment executed and delivered by means of electronic signatures shall have the same force and effect as copies hereof executed and delivered with original signatures. All parties hereto may rely upon electronic signatures as if such signatures were originals. Any party executing and delivering this Amendment electronically shall promptly thereafter deliver a counterpart signature page of this Amendment containing said party's original signature. All parties hereto agree that an electronic signature page may be introduced into evidence in any proceeding arising out of or related to this Amendment as if it were an original signature page.

8. Condition Precedent To Lease Amendment. Landlord's obligations hereunder are subject to the receipt by Landlord, no later than fifteen (15) business days after the Execution Date, of the Lender's Consent, as hereinafter defined. Landlord hereby agrees to use diligent efforts to obtain the Lender's Consent by such date; however, if Landlord does not receive the Lender's Consent by such date, this Amendment shall, at Landlord's option, thereupon be deemed terminated and of no further force or effect, and neither party shall have any further rights, obligations, or liabilities hereunder. As used herein, the term "**Lender's Consent**" means a written consent to this Amendment in form reasonably satisfactory to Landlord, executed by the holder of the promissory note (the "**Lender**") secured by any deed of trust encumbering the fee interest in the real property of which the Leased Premises are a part. Landlord hereby represents that it has previously received the consent of the Lender to the Initial Lease and the First Amendment.

Tenant's obligations hereunder are subject to the receipt by Tenant, no later than fifteen (15) business days after the Execution Date, of a Subordination and Non-disturbance Agreement executed by Lender in form and substance substantially similar to the form attached hereto as Exhibit C. If the Subordination and Non-disturbance Agreement is not received by Tenant on or before such date, this Amendment shall, thereupon be deemed terminated and of no further force or effect, and neither party shall have any further rights, obligations, or liabilities hereunder

[Signature Page Follows]

IN WITNESS WHEREOF, this Amendment has been executed as of the day and year first above written.

LANDLORD:

NW AUSTIN OFFICE PARTNERS LLC,
a Delaware limited liability company

By: NW Austin Holdco LLC,
a Delaware limited liability company,
its Manager

By: Menlo Equities V LLC,
a California limited liability company,
its Manager

By: Diamant Investments LLC,
a Delaware limited liability company,
its Member

By: /s/Richard Holmstrom Dated: March 29 , 2017
Richard Holmstrom, Manager

TENANT:

MOLECULAR TEMPLATES, INC.
a Delaware corporation

By: /s/Jason Kim
Printed Name: Jason Kim
Title: President & CFO Dated: March 28 , 2017

EXHIBIT A

OUTLINE OF EXPANSION SPACE

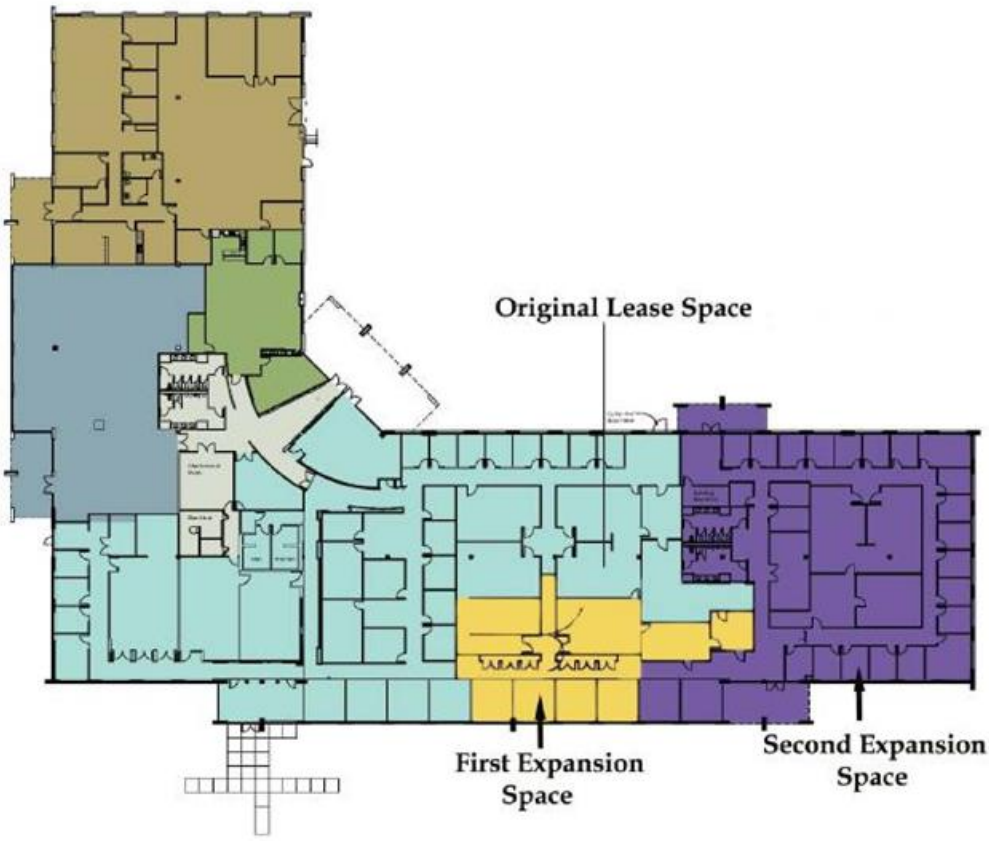


EXHIBIT B

CONSOLIDATED RENT SCHEDULE

Existing Premises 18,512 RSF		
Period	Yearly Rent PSF	Monthly Rent Total
Months 1-7	$12.15	$18,750.00
Month 8 (abated)	$0.00	$0.00
Months 9-12	$12.15	$18,750.00
Months 13-24	$19.35	$29,696.33
Months 25-36	$19.75	$30,467.67
Months 37-48	$20.50	$31,624.67
Months 49-60	$21.00	$32,396.00
Months 61-72	$21.50	$33,167.33

1st Amendment Expansion Premises 3,870 RSF		
Period	Yearly Rent PSF	Monthly Rent Total
Months 1-7	$0.00	$0.00
Month 8 (abated)	$0.00	$0.00
Months 9-12	$19.85	$6,401.63
Months 13-24	$20.35	$6,561.88
Months 25-36	$20.85	$6,724.13
Months 37-48	$21.35	$6,885.38
Months 49-60	$21.85	$7,046.63
Months 61-72	$22.35	$7,207.88

2nd Amendment Expansion Premises 10,765 RSF		
Period	Yearly Rent PSF	Monthly Rent Total
Months 1-7	$0.00	$0.00
Month 8 (abated)	$0.00	$0.00
Months 9-12	$19.85	$17,807.10
Months 13-24	$20.35	$18,255.65
Months 25-36	$20.85	$18,704.19
Months 37-48	$21.35	$19,152.73
Months 49-60	$21.85	$19,601.27
Months 61-72	$22.35	$20,049.81

Total Leased Premises 33,147 RSF		
Period	Yearly Rent PSF	Monthly Rent Total
Months 1-7	$6.79	$18,750.00
Month 8 (abated)	$0.00	$0.00
Months 9-12	$15.55	$42,958.73
Months 13-24	$19.74	$54,514.85
Months 25-36	$20.14	$55,895.98
Months 37-48	$20.88	$57,662.77
Months 49-60	$21.38	$59,043.90
Months 61-72	$21.88	$60,425.02

EXHIBIT C

FORM OF SNDA

REQUESTED BY
AND WHEN RECORDED MAIL TO:

U.S. Bank National Association
Attn:
Loan No.:

THIS SPACE ABOVE FOR RECORDER'S USE

SUBORDINATION, NONDISTURBANCE AND ATTORNMENT AGREEMENT

NOTICE: THIS SUBORDINATION, NONDISTURBANCE AND ATTORNMENT AGREEMENT RESULTS IN YOUR LEASEHOLD ESTATE BECOMING SUBJECT TO AND OF LOWER PRIORITY THAN THE LIEN OF SOME OTHER OR LATER SECURITY INSTRUMENT.

This Subordination, Nondisturbance and Attornment Agreement (" **Agreement**") is entered into as of the ___ day of _____, 201__ by and among _____ ("**Tenant**"), NW Austin Office Partners LLC, a Delaware limited liability company ("**Borrower**") and U.S. BANK NATIONAL ASSOCIATION, a national banking association, as administrative agent (in such capacity, " **Agent**") for the Lenders (as defined below).

Factual Background

A. Borrower owns certain real property in the County of _____, State of Texas, more particularly described in Exhibit "A" attached and made a part hereof by this reference. The term "**Property**" herein means that real property together with all improvements (the "**Improvements**") located on it.

B. Borrower obtained a loan (the "**Loan**") as provided in a Loan Agreement dated as of November 10, 2015 (the " **Loan Agreement**") between Borrower, Agent and the "Lenders" now or hereafter existing thereunder ("**Lenders**"). The Loan is or will be evidenced by one or more promissory notes (collectively, the "**Notes**") which are or will be secured by a deed of trust encumbering the Property (the " **Deed of Trust**") with an assignment of rents. The Loan Agreement, the Notes, the Deed of Trust, this Agreement and all other documents and instruments identified in the Loan Agreement as "Loan Documents," all as amended from time to time, shall be collectively referred to herein as the "**Loan Documents**."

C. Tenant and Borrower (as landlord) have entered into that certain lease described in Exhibit "B" attached hereto and made a part hereof by this reference (the "Lease") under which Borrower leased to Tenant a portion of the Improvements located within the Property and more particularly described in the Lease (the "Premises").

D. It is a requirement of the Loan to Borrower that Tenant agree, among other things, to subordinate Tenant's rights under the Lease to the lien of the Loan Documents and to attorn to Agent and Lenders on the terms and conditions of this Agreement. Tenant is willing to agree to such subordination and attornment and other conditions, provided that Agent (on behalf of itself and the Lenders) agrees to a nondisturbance provision, all as set forth more fully below.

Agreement

Therefore, the parties agree as follows:

1. Subordination. The Loan Documents and all supplements, amendments, modifications, renewals, replacements and extensions of and to them shall unconditionally be and remain at all times a lien on the Property prior and superior to the Lease, to the leasehold estate created by it, and to all rights and privileges of Tenant under it. The Lease and leasehold estate, together with all rights and privileges of Tenant under the Lease, are hereby unconditionally made subordinate to the lien of the Loan Documents in favor of Agent and/or Lenders. Tenant consents to Borrower, Lenders and Agent entering into the Deed of Trust and the other Loan Documents. Tenant further declares, agrees and acknowledges that in making disbursements under the Loan Documents, neither Agent nor Lenders have any obligation or duty to, nor have Agent or Lenders represented that any of them will, see to the application of such proceeds by the person or persons to whom they are disbursed by Agent or Lenders, and any application or use of such proceeds for purposes other than those provided for in the Loan Documents shall not defeat the subordination made in this Agreement, in whole or in part.

2. Definitions of "Transfer of the Property" and "Purchaser." As used herein: (i) the term "**Transfer of the Property**" means any transfer of Borrower's interest in the Property by foreclosure, trustee's sale or other action or proceeding for the enforcement of the Deed of Trust or by deed in lieu thereof; (ii) the term "**Purchaser**" means any transferee, including (if applicable) any Lender Purchaser (as defined below) of the interest of Borrower as a result of any such Transfer of the Property and also includes any and all successors and assigns of such transferee; and (iii) the term "**Lender Purchaser**" means (as applicable), Agent, any Lender or Lenders, or any affiliate or designee of any of them, that becomes a Purchaser.

3. Nondisturbance. The enforcement of the Deed of Trust shall not terminate the Lease or disturb Tenant in the possession and use of the Premises unless at the time of foreclosure Tenant is in default (beyond applicable periods of notice and grace) under the Lease or this Agreement, and Agent so notifies Tenant in writing at or prior to the time of the foreclosure sale that the Lease will be terminated by foreclosure because of such default. The nondisturbance herein granted is subject to Section 5 below. This nondisturbance applies to any option to extend or renew the Lease term which is set forth in the Lease as of the date of this Agreement.

4. Attornment. Subject to Section 3 above, if any Transfer of the Property should occur, Tenant shall and hereby does attom to Purchaser, including Agent if it should be the Purchaser, as the landlord under the Lease, and Tenant shall be bound to Purchaser under all of the terms, covenants and conditions of the Lease for the balance of the Lease term and any extensions or renewals of it which may then or later be in effect under any validly exercised extension or renewal option contained in the Lease, all with the same force and effect as if Purchaser had been the original landlord under the Lease.

This attornment shall be effective and self-operative without the execution of any further instruments upon Purchaser's succeeding to the interest of the landlord under the Lease.

5. Subordination of Options and Rights of First Refusal. The Loan Documents and all supplements, amendments, modifications, renewals, replacements and extensions of and to them shall unconditionally be and remain at all times a lien on the Property prior and superior to any existing or future right of Tenant, whether arising out of the Lease or otherwise, to exercise any option or right of first refusal to:

(a) purchase the Premises or the Property or any interest or portion in or of either of them; or

(b) expand into other space in the Improvements.

Tenant specifically agrees and acknowledges that upon any Transfer of the Property, any such purchase or expansion option or right of first refusal, whether now existing or in the future arising, shall terminate and be inapplicable to the Property notwithstanding the nondisturbance granted to Tenant in Section 3 above. If any option or right of first refusal to purchase is exercised prior to a Transfer of the Property, any title so acquired to all or any part of the Property shall be subject to the lien of the Loan Documents, which lien shall in no way be impaired by the exercise of such option or right of first refusal. Agent and Lenders specifically reserves all of their rights to enforce any accelerating transfer, due on sale, due on encumbrance or similar provision in the Deed of Trust or any other Loan Document.

6. Notices of Default; Material Notices; Agent's Rights to Cure Default . Tenant shall send a copy of any notice of default or similar statement with respect to the Lease to Agent at the same time such notice or statement is sent to Borrower. In the event of any act or omission by Borrower which would give Tenant the right to terminate the Lease or to claim a partial or total eviction, Tenant shall not exercise any such right or make any such claim until it has given Agent written notice of such act or omission and has given Agent the following applicable cure period to remedy such default: (i) with respect to monetary defaults, thirty (30) days after the expiration of Landlord's cure period with respect to such monetary default; or (ii) with respect to nonmonetary defaults, sixty (60) days after the expiration of Landlord's cure period with respect to such nonmonetary default, provided that if Agent commences a cure of such nonmonetary default within the prescribed period, and thereafter diligently pursues such cure to completion, the cure period shall be extended to provide Agent sufficient time to complete such cure. Acts taken by Agent to obtain possession of the Property shall be deemed acts taken to cure. Nothing in this Agreement, however, shall be construed as a promise or undertaking by Agent or Lenders to cure any default of Borrower.

7. Limitation on Agent's and Lenders' Liability . Except as otherwise provided in Section 4 above, nothing in this Agreement shall be deemed or construed to be an agreement by Agent or any Lender to perform any covenant of Borrower as landlord under the Lease. Tenant agrees that if any Lender Purchaser acquires Borrower's interest in the Property by virtue of a Transfer of the Property, then (notwithstanding Section 4 above), upon a subsequent transfer of the Property by such Lender Purchaser to a new owner, such Lender Purchaser shall have no further liability under the Lease after said transfer.

8. Limitation on Liability. No Purchaser who acquires title to the Property shall have any obligation or liability beyond its interest in the Property.

9. Tenant's Covenants. Tenant agrees that during the term of the Lease, without Agent's prior written consent, Tenant shall not:

(a) pay any rent or additional rent more than one month in advance to any landlord including Borrower; or

(b) cancel, terminate or surrender the Lease, except at the normal expiration of the Lease term or as provided in Section 6 above; or

(c) enter into any amendment, modification or other agreement relating to the Lease; or

(d) assign or sublet any portion of the Lease or the Premises, except as expressly permitted in the Lease.

10. Purchaser Not Obligated. Any Purchaser (including, if applicable, any Lender Purchaser) shall not: (a) be liable for any damages or other relief attributable to any act or omission of any prior Landlord under the Lease including Borrower; or (b) be subject to any offset or defense not specifically provided for in the Lease which Tenant may have against any prior landlord under the Lease; or (c) be bound by any prepayment by Tenant of more than one month's installment of rent; or (d) be obligated for any security deposit not actually delivered to Purchaser; or (e) be bound by any modification or amendment of or to the Lease unless the amendment or modification shall have been approved in writing by Agent.

11. Tenant's Estoppel Certificate.

(a) True and Complete Lease. Tenant represents and warrants to Agent and Lenders that Exhibit B accurately identifies the Lease and all amendments, supplements, side letters and other agreements and memoranda pertaining to the Lease, the leasehold and/or the Premises.

(b) Tenant's Option Rights. Tenant has no right or option of any nature whatsoever, whether arising out of the Lease or otherwise, to purchase the Premises or the Property, or any interest or portion in or of either of them, to expand into other space in the Improvements or to extend or renew the term of the Lease, except as described in the attached Exhibit C.

(c) No Default. As of the date of this Agreement, Tenant represents and warrants that to the best of Tenant's knowledge there exist no events of default or events that with notice or the passage of time or both would be events of default under the Lease on either the Tenant's part or the Borrower's, nor is there any right of offset against any of Tenant's obligations under the Lease, except as described in the attached Exhibit D. Tenant represents and warrants that the Lease is in full force and effect as of the date of this Agreement.

12. Integration; Etc. This Agreement integrates all of the terms and conditions of the parties' agreement regarding the subordination of the Lease to the Loan Documents, attornment, nondisturbance and the other matters contained herein. If there is any conflict between the terms, conditions and provisions of this Agreement and those of any other agreement or instrument, including the Lease, the terms, conditions and provisions of this Agreement shall prevail. This Agreement may not be modified or amended except by a written agreement signed by the parties or their respective successors in interest. This Agreement may be executed in counterparts, each of which is an original but all of which shall constitute one and the same instrument.

13. Notices. All notices given under this Agreement shall be in writing and shall be given by personal delivery, overnight receipted courier or by registered or certified United States mail, postage prepaid, sent to the party at its address appearing below. Notices shall be effective upon receipt (or on the date when proper delivery is refused). Addresses for notices may be changed by any

party by notice to all other parties in accordance with this Section. Service of any notice on any one Borrower shall be effective service on Borrower for all purposes.

To Agent: U.S. Bank National Association

Attention: Loan Administration

To Borrower:

To Tenant:

14. Attorneys' Fees. If any lawsuit, judicial reference or arbitration is commenced which arises out of or relates to this Agreement, the prevailing party shall be entitled to recover from each other party such sums as the court, referee or arbitrator may adjudge to be reasonable attorneys' fees, including the costs for any legal services by in-house counsel, in addition to costs and expenses otherwise allowed by law.

15. **WAIVER OF RIGHT TO TRIAL BY JURY**. **EACH PARTY TO THIS AGREEMENT HEREBY EXPRESSLY WAIVES ANY RIGHT TO TRIAL BY JURY OF ANY CLAIM, DEMAND, ACTION OR CAUSE OF ACTION ARISING UNDER THIS AGREEMENT OR IN CONNECTION WITH THE LEASE, INCLUDING, WITHOUT LIMITATION, ANY PRESENT OR FUTURE MODIFICATION THEREOF, WHETHER SUCH CLAIM, DEMAND, ACTION OR CAUSE OF ACTION IS NOW EXISTING OR HEREAFTER ARISING, AND WHETHER SOUNDING IN CONTRACT OR TORT OR OTHERWISE; AND EACH PARTY HEREBY AGREES AND CONSENTS THAT ANY SUCH CLAIM, DEMAND, ACTION OR CAUSE OF ACTION SHALL BE DECIDED BY COURT TRIAL WITHOUT A JURY, AND THAT ANY PARTY TO THIS AGREEMENT MAY FILE AN ORIGINAL COUNTERPART OR A COPY OF THIS SECTION WITH ANY COURT AS WRITTEN EVIDENCE OF THE CONSENT OF THE PARTIES HERETO TO THE WAIVER OF ANY RIGHT THEY MIGHT OTHERWISE HAVE TO TRIAL BY JURY.**

16. Miscellaneous Provisions. This Agreement shall inure to the benefit of and be binding upon the parties and their respective successors and assigns. This Agreement is governed by the laws of the State of California without regard to the choice of law rules of that State. This Agreement satisfies any condition or requirement in the Lease relating to the granting of a nondisturbance agreement by Agent or Lenders. As used herein, the word "**include(s)**" means "include(s) without limitation," and the word " **including**" means "including but not limited to." Agent, at its sole discretion, may but shall not be obligated to record this Agreement. The term "Agent" as used herein shall include all successor administrative agents of the Lenders pursuant to the Loan Agreement, or if there is no administrative agent, shall include all then existing Lenders.

NOTICE: THIS AGREEMENT CONTAINS A PROVISION WHICH ALLOWS THE PERSON OBLIGATED ON YOUR LEASE TO OBTAIN A LOAN, A PORTION OF WHICH MAY BE EXPENDED FOR PURPOSES OTHER THAN IMPROVEMENT OF THE PROPERTY.

TENANT:

a

By:

[Printed Name and Title]

By:

[Printed Name and Title]

BORROWER:

a

By:

[Printed Name and Title]

By:

[Printed Name and Title]

AGENT:

U.S. BANK NATIONAL ASSOCIATION,
a national banking association,

a

By:

[Printed Name and Title]

By:

[Printed Name and Title]

a

By:

[Printed Name and Title]

By:

[Printed Name and Title]

EXHIBIT A TO SNDA

PROPERTY DESCRIPTION

EXHIBIT B TO SNDA

**IDENTIFY LEASE AND LIST ALL AMENDMENTS,
SUPPLEMENTS, SIDE LETTERS AND OTHER AGREEMENTS
AND MEMORANDA PERTAINING TO LEASE, PREMISES OR PROPERTY**

EXHIBIT C TO SNDA

LIST OF PURCHASE, EXPANSION, FIRST REFUSAL, EXTENSION AND RENEWAL OPTIONS

Exhibit C to SNDA

EXHIBIT D TO SNDA

LIST ANY EXISTING DEFAULTS OR OFFSETS UNDER LEASE

ACKNOWLEDGMENTS

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF _____)
COUNTY OF _____)

On _____, before me, _____, a Notary Public, personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of _____ that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF _____)
COUNTY OF _____)

On _____, before me, _____, a Notary Public, personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of _____ that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF _____)
COUNTY OF _____)

On _____, before me, _____, a Notary Public, personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of _____ that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

Exhibit 10.17.2

THIRD AMENDMENT TO LEASE

This **Third Amendment To Lease** ("**Amendment**") is dated as of this 23 day of June, 2017 (the "**Execution Date**"), by and between **NW Austin Office Partners LLC**, a Delaware limited liability company ("**Landlord**"), and **Molecular Templates, Inc.**, a Delaware corporation ("**Tenant**").

R E C I T A L S:

A. Landlord and Tenant entered into that certain Lease ("**Initial Lease**") dated as of October 1, 2016, as amended by that certain First Amendment to Lease ("**First Amendment**"), dated as of January 30, 2017, and as amended by that certain Second Amendment to Lease, dated as of March 29, 2017 (the "**Second Amendment**," together with the Initial Lease and First Amendment, the "**Original Lease**"), whereby Landlord agreed to lease to Tenant certain space in the building with a street address of 9301 Amberglen Boulevard, Austin, Texas, also known as Building J (the "**Building**").

B. By this Amendment, Landlord and Tenant desire to modify the Original Lease as provided herein.

C. Unless otherwise defined herein, capitalized terms as used herein shall have the same meanings as given thereto in the Original Lease.

NOW, THEREFORE, in consideration of the foregoing recitals and the mutual covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

A G R E E M E N T:

1. Outside Date. Notwithstanding anything to the contrary in the Second Amendment, the term "Outside Date" (as therein defined) shall hereinafter mean August 15, 2017.

2. Lease Commencement Date of Second Expansion Space. Notwithstanding anything to the contrary in the Second Amendment, with respect to the Second Expansion Space, the term "Lease Commencement Date" shall mean the Effective Date.

3. Lease Expiration Date. Provided that the Effective Date shall have occurred and the Second Amendment shall be in effect, the Lease Expiration Date for the Lease shall be the date that is a Seventy Two (72) full calendar months after the Effective Date, including any days necessary to have the Lease Term expire on the last day of such seventy-second (72nd) calendar month after the Effective Date.

4. Base Monthly Rent. Provided that the Effective Date shall have occurred and the Second Amendment shall be in effect, attached hereto as Exhibit A is a consolidated rent schedule showing the Base Monthly Rent payable for all of the Leased Premises leased by Tenant throughout the Lease Term, which the parties agree is accurate, complete and, effective as of the

Effective Date, shall supersede the Base Monthly Rent schedule set forth in Exhibit B of the Second Amendment. Tenant shall pay to Landlord, within two [2] business days after the Effective Date, the first installment of Monthly Base Rent and Additional Rent for the Second Expansion Space in an amount of $27,769.47 (comprised of $17,807.10 in Base Monthly Rent and $9,962.37 in Additional Rent). Except as amended herein, Rent for the Leased Premises shall otherwise to be payable in accordance with the provisions of the Original Lease. Promptly upon request by the other after the Lease Commencement Date has occurred for the Second Expansion Space, Landlord and Tenant agree to execute and deliver a Lease Commencement Date Certificate in the form of Exhibit B attached hereto.

5. Rent Abatement. The first paragraph of Section 2.D of the Second Amendment is hereby deleted in its entirety. Notwithstanding anything to the contrary contained in Section 4 above and to the Original Lease, and provided that Tenant is not in default, beyond applicable periods of notice and grace, of its monetary and material non-monetary obligations under the Lease, and in addition to the abatement provided in the Initial Lease as such abatement is amended below by this Amendment with respect to the portion of the Lease Premises initially demised thereunder, Landlord agrees to abate Tenant's obligation to pay Base Monthly Rent for the Second Expansion Space and the Expansion Space (as defined in the First Amendment) for the initial seven (7) full months of the Lease Term after the Lease Commencement Date, as such term is applicable to each space. Further, Landlord agrees to abate Tenant's obligation to pay Base Monthly Rent for the entirety of the Leased Premises during the eighth (8th) full calendar month of the Lease Term after the Lease Commencement Date, as such term is applicable to each space. However, notwithstanding anything to the contrary contained in the Original Lease, during the Base Rent Abatement Period (defined below), Tenant shall still be responsible for the payment of all of its other monetary obligations under the Lease. If a default by Tenant under the Lease results in early termination of the Lease, then as a part of the recovery permitted by the Lease, Landlord shall be entitled to the recovery of the Base Monthly Rent that was abated during the initial four (4) full months of the Lease Term after the Lease Commencement Date, as such term is applicable to each space.

The second paragraph of Paragraph 3.1(a) of the Initial Lease (as amended by the Second Amendment) is hereby amended by:

(a) Deleting the second sentence thereof and inserting the following in lieu thereof: "Base Monthly Rent for the Expansion Space and Second Expansion Space is not payable during the initial eight (8) full months of the Lease Term following the Lease Commencement Date applicable to each space."

(b) Deleting the fourth sentence thereof, beginning "By way of example."

6. Miscellaneous. The first sentence of Section 1 of the Second Amendment is hereby amended by inserting "provided the same occurs" immediately before "on or before".

7. Broker. Landlord and Tenant each represents, warrants and agrees to the other that it has not had any dealings with any real estate broker(s), leasing agent(s), finder(s) or salesmen, other than Landlord's Broker and Tenant's Broker, respectively, in negotiating or consummating

this Amendment. Landlord and Tenant each agrees to indemnify, defend with competent counsel, and hold the other harmless from and against any claim for commission or finder's fee by any person or entity who claims or alleges that they were retained or engaged by it or at its request in connection with this Amendment, other than Landlord's Broker and Tenant's Broker. Landlord shall pay any commission or fee due to Tenant's Broker in connection with this Amendment.

8. Tenant Representations. Each person executing this Amendment on behalf of Tenant represents and warrants to Landlord that: (a) Tenant is properly formed and validly existing under the laws of the state in which Tenant is formed and Tenant is authorized to transact business in the state in which the Building is located; (b) Tenant has full right and authority to enter into this Amendment and to perform all of Tenant's obligations hereunder; and (c) each person (and both persons if more than one signs) signing this Amendment on behalf of Tenant is duly and validly authorized to do so.

9. Defaults. Tenant hereby represents and warrants to Landlord that, to the knowledge of Tenant, as of the date of this Amendment, Landlord and Tenant are in full compliance with all terms, covenants and conditions of the Lease and that there are no breaches or defaults under the Lease by Landlord or Tenant, and that Tenant does not know of any event or circumstance which, given the passage of time, would constitute a default under the Lease by either Landlord or Tenant.

Landlord hereby represents and warrants to Tenant that, to the knowledge of Landlord, as of the date of this Amendment, Landlord and Tenant are in full compliance with all terms, covenants and conditions of the Lease and that there are no breaches or defaults under the Lease by Landlord or Tenant, and that Landlord does not know of any event or circumstance which, given the passage of time, would constitute a default under the Lease by either Landlord or Tenant.

10. No Further Modification. Except as set forth in this Amendment, all of the terms and provisions of the Lease shall apply with respect to the Leased Premises (including the Second Expansion Space) and shall remain unmodified and in full force and effect.

11. Counterparts and Electronic Signatures. This Amendment may be executed in counterparts, each of which shall be deemed an original, but such counterparts, when taken together, shall constitute one agreement. This Amendment may be executed by a party's signature transmitted by electronic means, and copies of this Amendment executed and delivered by means of electronic signatures shall have the same force and effect as copies hereof executed and delivered with original signatures. All parties hereto may rely upon electronic signatures as if such signatures were originals. Any party executing and delivering this Amendment electronically shall promptly thereafter deliver a counterpart signature page of this Amendment containing said party's original signature. All parties hereto agree that an electronic signature page may be introduced into evidence in any proceeding arising out of or related to this Amendment as if it were an original signature page.

12. Condition Precedent To Lease Amendment. Landlord's obligations hereunder are subject to the receipt by Landlord, no later than fifteen (15) business days after the Execution Date, of the Lender's Consent, as hereinafter defined. Landlord hereby agrees to use diligent efforts to obtain the Lender's Consent by such date; however, if Landlord does not receive the Lender's Consent by such date, this Amendment shall, at Landlord's option, thereupon be deemed

terminated and of no further force or effect, and neither party shall have any further rights, obligations, or liabilities hereunder. As used herein, the term "**Lender's Consent**" means a written consent to this Amendment in form reasonably satisfactory to Landlord, executed by the holder of the promissory note (the "**Lender**") secured by any deed of trust encumbering the fee interest in the real property of which the Leased Premises are a part. Landlord hereby represents that it has previously received the consent of the Lender to the Initial Lease, the First Amendment and the Second Amendment.

[*Signature Page Follows*]

IN WITNESS WHEREOF, this Amendment has been executed as of the day and year first above written.

LANDLORD:

NW AUSTIN OFFICE PARTNERS LLC,
a Delaware limited liability company

By: NW Austin Holdco LLC,
a Delaware limited liability company,
its Manager

By: Menlo Equities V LLC,
a California limited liability company,
its Manager

By: Menlo Legacy Holdings, L.P.
a California limited partnership, its Managing Member

By: /s/ Henry D. Bullock Dated: June 29, 2017
Henry D. Bullock, President

TENANT:

MOLECULAR TEMPLATES, INC.

a Delaware corporation

By: /s/ Jason Kim

Printed Name: Jason Kim

Title: President & CFO Dated: June 23, 2017

EXHIBIT A

RENT SCHEDULE

Existing Premises 18,512 RSF		
Period	Yearly Rent PSF	Monthly Rent Total
Months 1-7	$12.15	$18,750.00
Month 8 (abated)	$0.00	$0.00
Months 9-12	$12.15	$18,750.00
Months 13-24	$19.25	$29,696.33
Months 25-36	$19.75	$30,467.67
Months 37-48	$20.50	$31,624.67
Months 49-60	$21.00	$32,396.00
Months 61-72	$21.50	$33,167.33
Months 73-LED *	$22.00	$33,938.67

* if applicable

Amendment Expansion Premises 3,870 RSF		
Period	Yearly Rent PSF	Monthly Rent Total
Months 1-7	$0.00	$0.00
Month 8 (abated)	$0.00	$0.00
Months 9-12	$19.85	$6,401.63
Months 13-24	$20.35	$6,562.88
Months 25-36	$20.85	$6,724.13
Months 37-48	$21.35	$6,885.38
Months 49-60	$21.85	$7,046.63
Months 61-72	$22.35	$7,207.88
Months 73-LED *	$22.85	$7,369.13

2nd Amendment Expansion Premises 10,768 RSF		
Period	Yearly Rent PSF	Monthly Rent Total
Months 1-7	$0.00	$0.00
Month 8 (abated)	$0.00	$0.00
Months 9-12	$19.85	$17,807.10
Months 13-24	$20.35	$18,255.65
Months 25-36	$20.85	$18,704.19
Months 37-48	$21.35	$19,152.73
Months 49-60	$21.85	$19,601.27
Months 61-72	$22.35	$20,049.81

as of the space,

NB: Monthly periods indicated above commence as of the "Lease Commencement Date" of each space, as applicable.

Exhibit B

LEASE COMMENCEMENT DATE CERTIFICATE

This **LEASE COMMENCEMENT CERTIFICATE** ("**Certificate**") is made this _____ day of _____, 2017, by and between **NW Austin Office Partners LLC**, a Delaware limited liability company ("**Landlord**"), and **Molecular Templates, Inc.**, a Delaware corporation ("**Tenant**"), and is attached to and made a part of that certain Lease dated as of October 1, 2016, by and between Landlord and Tenant ("**Initial Lease**"), as amended by that certain First Amendment to Lease, dated as of January 30, 2017, as amended by that Second Amendment to Lease, dated as of March 29, 2017, and as amended by that Third Amendment to Lease dated as of _____ 2017 (collectively, the "**Original Lease**," and as amended by this Certificate, the "**Lease**"). In the event of any conflict between the Original Lease and this Certificate, this Certificate shall control. Capitalized terms hereinafter used but not otherwise defined shall have the meaning ascribed to them in the Original Lease.

1. Landlord and Tenant hereby acknowledge and agree for all purposes of the Lease that the Lease Commencement Date for the Second Expansion Space is _____, 2017. As such the Lease Expiration Date shall be _____, 20__.

2. Attached hereto as Exhibit A is a consolidated rent schedule showing the Base Monthly Rent payable for all of the Leased Premises leased by Tenant throughout the Lease Term, which the parties agree is accurate, complete and shall supersede any Base Monthly Rent schedule set forth in the Original Lease.

3. The parties agree that, notwithstanding anything to the contrary in the Original Lease, the amount of "$53,133.33" in Paragraph 3.1(a) of the Initial Lease (as amended by the Second Amendment), is hereby revised to "$_____" and Section 5 of Exhibit E to the Lease is hereby deleted in its entirety and replaced with the following:

Period	Base Monthly Rent
Months **-12	$_____
Months 13-24	$_____
Months 25-36	$_____
Months 37-48	$_____
Months 49-60	$_____
Months 61-72	$_____
Month 73- Lease Expiration Date	$_____

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, Landlord and Tenant have executed this Certificate on the date first above written.

LANDLORD:

NW AUSTIN OFFICE PARTNERS LLC,
a Delaware limited liability company

By: NW Austin Holdco LLC,
a Delaware limited liability company,
its Manager

By: Menlo Equities V LLC,
a California limited liability company,
its Manager

By: Menlo Legacy Holdings, L.P.
a California limited partnership, its Managing Member

By: _____
Henry D. Bullock, President

TENANT:

MOLECULAR TEMPLATES, INC.

a Delaware corporation

By:

Printed Name:

Title:

Exhibit 10.22

MOLECULAR TEMPLATES, INC.

AMENDED AND RESTATED 2009 STOCK PLAN

1. Purposes of the Plan. The purposes of this Plan are to attract and retain the best available personnel for positions of substantial responsibility, to provide additional incentive to Employees, Directors and Consultants and to promote the success of the Company's business. The Plan permits the grant of Options and Restricted Stock as the Administrator may determine.

2. Definitions. As used herein, the following definitions shall apply:

(a) "Administrator" means the Board or any of its Committees as shall be administering the Plan in accordance with Section 4 hereof.

(b) "Applicable Laws" means the requirements relating to the administration of equity compensation plans under U.S. state corporate laws, U.S. federal and state securities laws, the Code, any stock exchange or quotation system on which the Common Stock is listed or quoted and the applicable laws of any other country or jurisdiction where Awards are granted under the Plan.

(c) "Award" means, individually or collectively, a grant under the Plan of Options or Restricted Stock.

(d) "Award Agreement" means the written or electronic agreement setting forth the terms and provisions applicable to each Award granted under the Plan. The Award Agreement is subject to the terms and conditions of the Plan.

(e) "Board" means the Board of Directors of the Company.

(f) "Change in Control" means the occurrence of any of the following events:

(i) Change in Ownership of the Company. A change in the ownership of the Company which occurs on the date that any one person, or more than one person acting as a group ("Person"), acquires ownership of the stock of the Company that, together with the stock held by such Person, constitutes more than 50% of the total voting power of the stock of the Company, except that any change in the ownership of the stock of the Company as a result of a private financing of the Company that is approved by the Board will not be considered a Change in Control; or

(ii) Change in Effective Control of the Company. If the Company has a class of securities registered pursuant to Section 12 of the Exchange Act, a change in the effective control of the Company which occurs on the date that a majority of members of the Board is replaced during any twelve (12) month period by Directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. For purposes of this clause (ii), if any Person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same Person will not be considered a Change in Control; or

(iii) Change in Ownership of a Substantial Portion of the Company's Assets. A change in the ownership of a substantial portion of the Company's assets which occurs on the date that any Person acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such person or persons) assets from the Company that have a total gross fair market value equal to or more than 50% of the total gross fair market value of all of the assets of the Company immediately prior to such acquisition or acquisitions. For purposes of this subsection (iii), gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

For purposes of this Section 2(f), persons will be considered to be acting as a group if they are owners of a corporation that enters into a merger, consolidation, purchase or acquisition of stock, or similar business transaction with the Company.

Notwithstanding the foregoing, a transaction shall not be deemed a Change in Control unless the transaction qualifies as a change in control event within the meaning of Section 409A of the Code, as it has been and may be amended from time to time, and any proposed or final Treasury Regulations and Internal Revenue Service guidance that has been promulgated or may be promulgated thereunder from time to time.

Further and for the avoidance of doubt, a transaction shall not constitute a Change in Control if: (i) its sole purpose is to change the state of the Company's incorporation, or (ii) its sole purpose is to create a holding company that shall be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

(g) "Code" means the Internal Revenue Code of 1986, as amended. Any reference to a section of the Code herein shall be a reference to any successor or amended section of the Code.

(h) "Committee" means a committee of Directors or of other individuals satisfying Applicable Laws appointed by the Board, or by the compensation committee of the Board, in accordance with Section 4 hereof.

(i) "Common Stock" means the Common Stock of the Company.

(j) "Company" means Molecular Templates, Inc., a Delaware corporation.

(k) "Consultant" means any person who is engaged by the Company or any Parent or Subsidiary to render consulting or advisory services to such entity.

(l) "Director" means a member of the Board.

(m) "Disability" means total and permanent disability as defined in Section 22(e)(3) of the Code.

(n) "Employee" means any person, including officers and Directors, employed by the Company or any Parent or Subsidiary of the Company. Neither service as a

Director nor payment of a director's fee by the Company shall be sufficient to constitute "employment" by the Company.

(o) "Exchange Act" means the Securities Exchange Act of 1934, as amended.

(p) "Exchange Program" means a program under which (i) outstanding Options are surrendered or cancelled in exchange for Options of the same type (which may have lower or higher exercise prices and different terms), Options of a different type, and/or cash, and/or (ii) the exercise price of an outstanding Option is reduced. The terms and conditions of any Exchange Program shall be determined by the Administrator in its sole discretion.

(q) "Fair Market Value" means, as of any date, the value of Common Stock determined as follows:

(i) If the Common Stock is listed on any established stock exchange or a national market system, including without limitation the Nasdaq Global Market, the Nasdaq Global Select Market or the Nasdaq Capital Market, its Fair Market Value shall be the closing sales price for such stock (or, if no closing sales price was reported on that date, as applicable, on the last trading date such closing sales price was reported) as quoted on such exchange or system on the day of determination, as reported in The Wall Street Journal or such other source as the Administrator deems reliable;

(ii) If the Common Stock is regularly quoted by a recognized securities dealer but selling prices are not reported, its Fair Market Value shall be the mean between the high bid and low asked prices for the Common Stock on the day of determination (or, if no bids and asks were reported on that date, as applicable, on the last trading date such bids and asks were reported); or

(iii) In the absence of an established market for the Common Stock, the Fair Market Value thereof shall be determined in good faith by the Administrator.

(r) "Incentive Stock Option" means an Option that by its terms qualifies and is otherwise intended to qualify as an incentive stock option within the meaning of Section 422 of the Code and the regulations promulgated thereunder.

(s) "Nonstatutory Stock Option" means an Option that by its terms does not qualify or is not intended to qualify as an Incentive Stock Option.

(t) "Option" means a stock option granted pursuant to the Plan.

(u) "Parent" means a "parent corporation," whether now or hereafter existing, as defined in Section 424(e) of the Code.

(v) "Participant" means the holder of an outstanding Award.

(w) "Plan" means this 2009 Stock Plan.

(x) "Restricted Stock" means Shares issued pursuant to a Restricted Stock award under Section 7 of the Plan, or issued pursuant to the early exercise of an Option.

(y) "Restricted Stock Purchase Agreement" means a written or electronic agreement between the Company and the Participant evidencing the terms and restrictions applying to Shares purchased under a Restricted Stock award. The Restricted Stock Purchase Agreement is subject to the terms and conditions of the Plan and the notice of grant.

(z) "Securities Act" means the Securities Act of 1933, as amended.

(aa) "Service Provider" means an Employee, Director or Consultant.

(bb) "Share" means a share of the Common Stock, as adjusted in accordance with Section 11 below.

(cc) "Subsidiary" means a "subsidiary corporation," whether now or hereafter existing, as defined in Section 424(f) of the Code.

3. Stock Subject to the Plan. Subject to the provisions of Section 11 of the Plan, the maximum aggregate number of Shares that may be subject to Awards and sold under the Plan is 950,985 Shares. The Shares may be authorized but unissued, or reacquired Common Stock.

If an Award expires or becomes unexercisable without having been exercised in full, or is surrendered pursuant to an Exchange Program, the unpurchased Shares that were subject thereto shall become available for future grant or sale under the Plan (unless the Plan has terminated). However, Shares that have actually been issued under the Plan, upon exercise of an Award, shall not be returned to the Plan and shall not become available for future distribution under the Plan, except that if unvested Shares of Restricted Stock are repurchased by the Company at their original purchase price, such Shares shall become available for future grant under the Plan. Notwithstanding the foregoing and, subject to adjustment provided in Section 11, the maximum number of Shares that may be issued upon the exercise of Incentive Stock Options shall equal the aggregate Share number stated in the first paragraph of this Section, plus, to the extent allowable under Section 422 of the Code, any Shares that become available for issuance under the Plan under this second paragraph of this Section.

4. Administration of the Plan.

(a) Administrator. The Plan shall be administered by the Board or a Committee appointed by the Board, which Committee shall be constituted to comply with Applicable Laws.

(b) Powers of the Administrator. Subject to the provisions of the Plan and, in the case of a Committee, the specific duties delegated by the Board to such Committee, and subject to the approval of any relevant authorities, the Administrator shall have the authority in its discretion:

(i) to determine the Fair Market Value;

(ii) to select the Service Providers to whom Awards may from time to time be granted hereunder;

(iii) to select the Service Providers to whom Awards may from time to time be granted hereunder;

(iv) to approve forms of agreement for use under the Plan;

(v) to determine the terms and conditions of any Award granted hereunder. Such terms and conditions include, but are not limited to, the exercise price, the time or times when Awards may be exercised (which may be based on performance criteria), any vesting acceleration or waiver of forfeiture restrictions, and any restriction or limitation regarding any Award or the Common Stock relating thereto, based in each case on such factors as the Administrator, in its sole discretion, shall determine;

(vi) to institute an Exchange Program;

(vii) to prescribe, amend and rescind rules and regulations relating to the Plan, including rules and regulations relating to sub-plans established for the purpose of satisfying applicable foreign laws;

(viii) to modify or amend each Award (subject to Section 19(c) of the Plan) including but not limited to the discretionary authority to extend the post-termination exercise period of Awards and to extend the maximum term of an Option (subject to Section 6(a) regarding Incentive Stock Options);

(ix) to authorize any person to execute on behalf of the Company any instrument required to effect the grant of an Award previously granted by the Administrator; and

(x) to construe and interpret the terms of the Plan and Awards granted pursuant to the Plan.

(c) Effect of Administrator's Decision. All decisions, determinations and interpretations of the Administrator shall be final and binding on all Participants.

5. Eligibility. Nonstatutory Stock Options and Restricted Stock may be granted to Service Providers. Incentive Stock Options may be granted only to Employees.

6. Stock Options.

(a) Term of Option. The term of each Option shall be stated in the Award Agreement; provided, however, that the term shall be no more than ten (10) years from the date of grant thereof. In the case of an Incentive Stock Option granted to a Participant who, at the time the Option is granted, owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary, the term of the Option shall be five (5) years from the date of grant or such shorter term as may be provided in the Award Agreement.

(b) Option Exercise Price and Consideration.

(i) Exercise Price. The per share exercise price for the Shares to be issued upon exercise of an Option shall be such price as is determined by the Administrator, but shall be subject to the following:

(1) In the case of an Incentive Stock Option

(A) granted to an Employee who, at the time of grant of such Option, owns stock representing more than ten percent (10%) of the voting power of all classes of stock of the Company or any Parent or Subsidiary, the exercise price shall be no less than one hundred and ten percent (110%) of the Fair Market Value per Share on the date of grant.

(B) granted to any other Employee, the per Share exercise price shall be no less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant.

(2) In the case of a Nonstatutory Stock Option, the per Share exercise price shall be no less than one hundred percent (100%) of the Fair Market Value per Share on the date of grant.

(3) Notwithstanding the foregoing, Options may be granted with a per Share exercise price other than as required above in accordance with and pursuant to a transaction described in Section 424 of the Code.

(ii) Forms of Consideration. The consideration to be paid for the Shares to be issued upon exercise of an Option, including the method of payment, shall be determined by the Administrator (and, in the case of an Incentive Stock Option, shall be determined at the time of grant). Such consideration may consist of, without limitation, (1) cash, (2) check, (3) promissory note, to the extent permitted by Applicable Laws, (4) other Shares, provided that such Shares have a Fair Market Value on the date of surrender equal to the aggregate exercise price of the Shares as to which such Option shall be exercised and provided that accepting such Shares, in the sole discretion of the Administrator, shall not result in any adverse accounting consequences to the Company, (5) consideration received by the Company under a cashless exercise program implemented by the Company in connection with the Plan, (6) such other consideration and method of payment for the issuance of Shares to the extent permitted by Applicable Laws, or (7) any combination of the foregoing methods of payment. In making its determination as to the type of consideration to accept, the Administrator shall consider if acceptance of such consideration may be reasonably expected to benefit the Company.

(c) Exercise of Option.

(i) Procedure for Exercise; Rights as a Stockholder. Any Option granted hereunder shall be exercisable according to the terms hereof at such times and under such conditions as determined by the Administrator and set forth in the Award Agreement. An Option may not be exercised for a fraction of a Share.

An Option shall be deemed exercised when the Company receives (i) written or electronic notice of exercise (in accordance with the Award Agreement) from the person entitled to exercise the Option, and (ii) full payment for the Shares with respect to which the Option is exercised, together with any applicable withholding taxes. Full payment may consist of any consideration and method of payment authorized by the Administrator and permitted by the Award Agreement and the Plan . Shares issued upon exercise of an Option shall be issued in the name of the Participant or, if requested by the Participant, in the name of the Participant and his or her spouse. Until the Shares are issued (as evidenced by the appropriate entry on the books of the Company or of a duly authorized transfer agent of the Company), no right to vote or receive dividends or any other rights as a stockholder shall exist with respect to the Shares, notwithstanding the exercise of the Option. The Company shall issue (or cause to be issued) such Shares promptly after the Option is exercised. No adjustment shall be made for a dividend or other right for which the record date is prior to the date the Shares are issued, except as provided in Section 11 of the Plan.

Exercise of an Option in any manner shall result in a decrease in the number of Shares thereafter available, both for purposes of the Plan and for sale under the Option, by the number of Shares as to which the Option is exercised.

(ii) Termination of Relationship as a Service Provider. If a Participant ceases to be a Service Provider, such Participant may exercise his or her Option within such period of time as is specified in the Award Agreement, to the extent that the Option is vested on the date of termination (but in no event later than the expiration of the Willi of the Option as set forth in the Award Agreement). In the absence of a specified time in the Award Agreement, the Option shall remain exercisable for three (3) months following the Participant's termination. Unless the Administrator provides otherwise, if on the date of termination the Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option shall revert to the Plan. If, after termination, the Participant does not exercise his or her Option within the time specified by the Administrator, the Option shall terminate, and the Shares covered by such Option shall revert to the Plan.

(iii) Disability of Participant. If a Participant ceases to be a Service Provider as a result of the Participant's Disability, the Participant may exercise his or her Option within such longer period of time as is specified in the Award Agreement, to the extent the Option is vested on the date of termination (but in no event later than the expiration of the term of such Option as set forth in the Award Agreement). In the absence of a specified time in the Award Agreement, the Option shall remain exercisable for twelve (12) months following the Participant's termination. Unless the Administrator provides otherwise, if on the date of termination the Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option shall revert to the Plan. If, after termination, the Participant does not exercise his or her Option within the time specified herein, the Option shall terminate, and the Shares covered by such Option shall revert to the Plan.

(iv) Death of Participant. If a Participant dies while a Service Provider, the Option may be exercised within such longer period of time as is specified in the Award Agreement, to the extent that the Option is vested on the date of death (but in no event later than the expiration of the term of such Option as set forth in the Award Agreement) by the

Participant's designated beneficiary, provided such beneficiary has been designated prior to the Participant's death in a form acceptable to the Administrator. If no such beneficiary has been designated by the Participant, then such Option may be exercised by the personal representative of the Participant's estate or by the person(s) to whom the Option is transferred pursuant to the Participant's will or in accordance with the laws of descent and distribution. In the absence of a specified time in the Award Agreement, the Option shall remain exercisable for twelve (12) months following the Participant's termination. If, at the time of death, the Participant is not vested as to his or her entire Option, the Shares covered by the unvested portion of the Option shall immediately revert to the Plan. If the Option is not so exercised within the time specified herein, the Option shall terminate, and the Shares covered by such Option shall revert to the Plan.

(v) Incentive Stock Option Limit. Each Option shall be designated in the Award Agreement as either an Incentive Stock Option or a Nonstatutory Stock Option. However, notwithstanding such designation, to the extent that the aggregate Fair Market Value of the Shares with respect to which Incentive Stock Options are exercisable for the first time by the Participant during any calendar year (under all plans of the Company and any Parent or Subsidiary) exceeds one hundred thousand dollars ($100,000), such Options shall be treated as Nonstatutory Stock Options. For purposes of this Section 6(c)(v), Incentive Stock Options shall be taken into account in the order in which they were granted. The Fair Market Value of the Shares shall be determined as of the time the Option with respect to such Shares is granted.

7. Restricted Stock.

(a) Rights to Purchase. Restricted Stock may be issued either alone, in addition to, or in tandem with other awards granted under the Plan and/or cash awards made outside of the Plan. After the Administrator determines that it shall offer Restricted Stock under the Plan, it shall advise the offeree in writing or electronically of the terms, conditions and restrictions related to the offer, including the number of Shares that such person shall be entitled to purchase, the price to be paid (if any), and the time within which such person must accept such offer.

(b) Repurchase Option. Unless the Administrator determines otherwise, the Restricted Stock Purchase Agreement shall grant the Company a repurchase option exercisable within ninety (90) days of the voluntary or involuntary termination of the purchaser's service with the Company for any reason (including death or Disability). Unless the Administrator provides otherwise, the purchase price for Shares repurchased pursuant to the Restricted Stock Purchase Agreement shall be -the original price paid by the purchaser and may be paid by cancellation of any indebtedness of the purchaser to the Company. The repurchase option shall lapse at such rate as the Administrator may determine.

(c) Other Provisions. The Restricted Stock Purchase Agreement shall contain such other terms, provisions and conditions not inconsistent with the Plan as may be determined by the Administrator in its sole discretion.

(d) Rights as a Stockholder. Once the Restricted Stock is purchased or otherwise issued, the purchaser shall have rights equivalent to those of a stockholder and shall be

a stockholder when his or her purchase is entered upon the records of the duly authorized transfer agent of the Company. No adjustment shall be made for a dividend or other right for which the record date is prior to the date the Restricted Stock is purchased or otherwise issued, except as provided in Section 11 of the Plan.

8. Tax Withholding. Prior to the delivery of any Shares pursuant to an Award (or exercise thereof), the Company shall have the power and the right to deduct or withhold, or require a Participant to remit to the Company, an amount sufficient to satisfy federal, state, local, foreign or other taxes (including the Participant's FICA obligation) required to be withheld with respect to such Award (or exercise thereof). The Administrator, in its sole discretion and pursuant to such procedures as it may specify from time to time, shall determine in what manner it shall allow a Participant to satisfy such tax withholding obligation and may permit the Participant to satisfy such tax withholding obligation, in whole or in part by one (1) or more of the following: (a) paying cash (or by check), (b) electing to have the Company withhold otherwise deliverable Shares having a Fair Market Value equal to the minimum amount statutorily required to be withheld, or (c) selling a sufficient number of such Shares otherwise deliverable to a Participant through such means as the Company may determine in its sole discretion (whether through a broker or otherwise) equal to the minimum amount statutorily required to be withheld.

9. Limited Transferability of Awards. Unless determined otherwise by the Administrator, Awards may not be sold, pledged, assigned, hypothecated, transferred, or disposed of in any manner, including by entering into any short position, any "put equivalent position" or any "call equivalent position" (as defined in Section 16a-1(h) and Section 16a-1(b) of the Exchange Act, respectively) with respect to such securities, other than by will or by the laws of descent and distribution, and may be exercised, during the lifetime of the Participant, only by the Participant.

10. Leaves of Absence; Transfers.

(a) Unless the Administrator provides otherwise, or except as otherwise required by Applicable Laws, vesting of Awards granted hereunder shall be suspended during any unpaid leave of absence.

(b) A Service Provider shall not cease to be a Service Provider in the case of (i) any leave of absence approved by the Company, or (ii) transfers between locations of the Company or between the Company, its Parent, any Subsidiary, or any successor.

(c) For purposes of Incentive Stock Options, no such leave may exceed three (3) months, unless reemployment upon expiration of such leave is guaranteed by statute or contract. If reemployment upon expiration of a leave of absence approved by the Company is

not so guaranteed, then six (6) months following the first (1st) day of such leave, any Incentive Stock Option held by the Participant shall cease to be treated as an Incentive Stock Option and shall be treated for tax purposes as a Nonstatutory Stock Option.

11. Adjustments; Dissolution or Liquidation; Merger or Change in Control.

(a) Adjustments. In the event that any dividend or other distribution (whether in the form of cash, Shares, other securities, or other property), recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase, or exchange of Shares or other securities of the Company, or other change in the corporate structure of the Company affecting the Shares occurs, the Administrator, in order to prevent diminution or enlargement of the benefits or potential benefits intended to be made available under the Plan, shall adjust the number and class of Shares that may be delivered under the Plan and/or the number, class, and price of Shares covered by each outstanding Award.

(b) Dissolution or Liquidation. In the event of the proposed dissolution or liquidation of the Company, the Administrator shall notify each Participant as soon as practicable prior to the effective date of such proposed transaction. To the extent it has not been previously exercised, an Award shall terminate immediately prior to the consummation of such proposed action.

(c) Merger or Change in Control. In the event of a merger or Change in Control, each outstanding Award shall be treated as the Administrator determines, including, without limitation, that each Award be assumed or an equivalent award substituted by the successor corporation or a Parent or Subsidiary of the successor corporation. The Administrator shall not be required to treat all Awards similarly in the transaction.

Notwithstanding the foregoing, in the event of a Change in Control in which the successor corporation does not assume or substitute for the Award, the Participant shall fully vest in and have the right to exercise his or her outstanding Awards, including Shares as to which such Award would not otherwise be vested or exercisable, and restrictions on all of the Participant's Restricted Stock shall lapse. In addition, if an Award is not assumed or substituted in the event of a merger or Change in Control, the Administrator shall notify the Participant in writing or electronically that the Award shall be fully vested and exercisable for a period of time determined by the Administrator in its sole discretion, and any Award not assumed or substituted for shall terminate upon the expiration of such period for no consideration, unless otherwise determined by the Administrator.

For the purposes of this Section 11(c), the Award shall be considered assumed if, following the merger or Change in Control, the option or right confers the right to purchase or receive, for each Share subject to the Award immediately prior to the merger or Change in Control, the consideration (whether stock, cash, or other securities or property) received in the merger or Change in Control by holders of Common Stock for each Share held on the effective date of the transaction (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding Shares); provided, however, that if such consideration received in the merger or Change in Control is not solely common stock of the successor corporation or its Parent, the Administrator may, with the consent of the successor corporation, provide for the consideration to be received upon the exercise of the Award, for each Share subject to the Award, to be solely common stock of the successor corporation or its Parent equal in fair market value to the per share consideration received by holders of common stock in the merger or Change in Control.

12. Time of Granting Awards. The date of grant of an Award shall, for all purposes, be the date on which the Administrator makes the determination granting such Award, or such later date as is determined by the Administrator. Notice of the determination shall be given to each Service Provider to whom an Award is so granted within a reasonable time after the date of such grant.

13. No Effect on Employment or Service. Neither the Plan nor any Award shall confer upon any participant any right with respect to continuing the Participant's relationship as a Service Provider with the Company, nor shall it interfere in any way with his or her right or the Company's right to terminate such relationship at any time, with or without cause, and with or without notice.

14. Conditions Upon Issuance of Shares.

(a) Legal Compliance. Shares shall not be issued pursuant to the exercise of an Award unless the exercise of such Award and the issuance and delivery of such Shares shall comply with Applicable Laws and shall be further subject to the approval of counsel for the Company with respect to such compliance.

(b) Investment Representations. As a condition to the exercise of an Award, the Administrator may in its discretion require the person exercising such Award to represent and warrant at the time of any such exercise that the Shares are being purchased only for investment and without any present intention to sell or distribute such Shares.

15. Inability to Obtain Authority. The inability of the Company to obtain authority from any regulatory body having jurisdiction, which authority is deemed by the Company's counsel to be necessary to the lawful issuance and sale of any Shares hereunder, shall relieve the Company of any liability in respect of the failure to issue or sell such Shares as to which such requisite authority shall not have been obtained.

16. Reservation of Shares. The Company, during the term of this Plan, shall at all times reserve and keep available such number of Shares as shall be sufficient to satisfy the requirements of the Plan.

17. Stockholder Approval. The Plan shall be subject to approval by the stockholders of the Company within twelve (12) months after the date the Plan is adopted. Such stockholder approval shall be obtained in the degree and manner required under Applicable Laws.

18. Term of Plan. Subject to stockholder approval in accordance with Section 17, the Plan shall become effective upon its adoption by the Board. Unless sooner terminated under Section 19, it shall continue in effect for a term of ten (10) years from the later of (a) the effective date of the Plan, or (b) the earlier of the most recent Board or stockholder approval of an increase in the number of Shares reserved for issuance under the Plan.

19. Amendment and Termination of the Plan.

(a) Stockholder Approval. The Board shall obtain stockholder approval of any Plan amendment to the extent necessary and desirable to comply with Applicable Laws.

(b)

Effect of Amendment or Termination. No amendment, alteration, suspension or termination of the Plan shall impair the rights of any Participant, unless mutually agreed otherwise between the Participant and the Administrator, which agreement must be in writing (which may include e-mail) and signed by the Participant and the Company. Termination of the Plan shall not affect the Administrator's ability to exercise the powers granted to it hereunder with respect to Options granted under the Plan prior to the date of such termination.

MOLECULAR TEMPLATES, INC.

2009 STOCK PLAN

STOCK OPTION AGREEMENT

Unless otherwise defined herein, the terms defined in the 2009 Stock Plan (the "Plan") shall have the same defined meanings in this Stock Option Agreement (the "Option Agreement").

I. NOTICE OF STOCK OPTION GRANT

Name:

Address:

The undersigned Participant has been granted an Option to purchase Common Stock of the Company, subject to the terms and conditions of the Plan and this Option Agreement, as follows:

Date of Grant:	_____
Vesting Commencement Date:	_____
Exercise Price per Share:	$_____
Total Number of Shares Granted	_____
Total Exercise Price:	$_____
Type of Option:	_____ Incentive Stock Option
	_____ Nonstatutory Stock Option
Term/Expiration Date:	Tenth Anniversary of Date of Grant

Vesting Schedule:

This Option shall be exercisable, in whole or in part, according to the following vesting schedule:

Termination Period:

This Option shall be exercisable for three (3) months after Participant ceases to be a Service Provider, unless such termination is due to Participant's death or Disability, in which case this Option shall be exercisable for twelve (12) months after Participant ceases to be a Service Provider. Notwithstanding the foregoing sentence, in no event may this Option be exercised after the Term/Expiration Date as provided above and this Option may be subject to earlier termination as provided in the Plan.

II. AGREEMENT

1. Grant of Option. The Administrator of the Company hereby grants to the Participant named in the Notice of Stock Option Grant in Part I of this Agreement ("Participant"), an option (the "Option") to purchase the number of Shares set forth in the Notice of Stock Option Grant, at the exercise price per Share set forth in the Notice of Stock Option Grant (the "Exercise Price"), and subject to the terms and conditions of the Plan, which is incorporated herein by reference. Subject to Section 19(c) of the Plan, in the event of a conflict between the terms and conditions of the Plan and this Option Agreement, the terms and conditions of the Plan shall prevail.

If designated in the Notice of Stock Option Grant as an Incentive Stock Option ("ISO"), this Option is intended to qualify as an Incentive Stock Option as defined in Section 422 of the Code. Nevertheless, to the extent that it exceeds the $100,000 rule of Code Section 422(d), this Option shall be treated as a Nonstatutory Stock Option ("NSO"). Further, if for any reason this Option (or portion thereof) shall not qualify as an ISO, then, to the extent of such nonqualification, such Option (or portion thereof) shall be regarded as a NSO granted under the Plan. In no event shall the Administrator, the Company or any Parent or Subsidiary or any of their respective employees or directors have any liability to Participant (or any other person) due to the failure of the Option to qualify for any reason as an ISO.

2. Exercise of Option.

(a) Right to Exercise. This Option shall be exercisable during its term in accordance with the Vesting Schedule set out in the Notice of Stock Option Grant and with the applicable provisions of the Plan and this Option Agreement.

(b) Method of Exercise. This Option shall be exercisable by delivery of an exercise notice in the form attached as Exhibit A (the "Exercise Notice") or in a manner and pursuant to such procedures as the Administrator may determine, which shall state the election to exercise the Option, the number of Shares with respect to which the Option is being exercised, and such other representations and agreements as may be required by the Company. The Exercise Notice shall be accompanied by payment of the aggregate Exercise Price as to all Exercised Shares, together with any applicable tax withholding. This Option shall be deemed to be exercised upon receipt by the Company of such fully executed Exercise Notice accompanied by the aggregate Exercise Price, together with any applicable tax withholding.

No Shares shall be issued pursuant to the exercise of an Option unless such issuance and such exercise comply with Applicable Laws. Assuming such compliance, for

income tax purposes the Shares shall be considered transferred to Participant on the date on which the Option is exercised with respect to such Shares.

3. Method of Payment. Payment of the aggregate Exercise Price shall be by any of the following, or a combination thereof, at the election of the Participant:

(a) cash;

(b) check;

(c) consideration received by the Company under a formal cashless exercise program adopted by the Company in connection with the Plan; or

(d) surrender of other Shares which (i) shall be valued at its Fair Market Value on the date of exercise, and (ii) must be owned free and clear of any liens, claims, encumbrances or security interests, if accepting such Shares, in the sole discretion of the Administrator, shall not result in any adverse accounting consequences to the Company.

4. Restrictions on Exercise. This Option may not be exercised until such time as the Plan has been approved by the stockholders of the Company, or if the issuance of such Shares upon such exercise or the method of payment of consideration for such shares would constitute a violation of any Applicable Law.

5. Non-Transferability of Option. This Option may not be transferred in any manner otherwise than by will or by the laws of descent or distribution and may be exercised during the lifetime of Participant only by Participant. The terms of the Plan and this Option Agreement shall be binding upon the executors, administrators, heirs, successors and assigns of Participant.

6. Term of Option. This Option may be exercised only within the term set out in the Notice of Stock Option Grant, and may be exercised during such term only in accordance with the Plan and the terms of this Option.

7. Tax Obligations.

(a) Tax Withholding. Participant agrees to make appropriate arrangements with the Company (or the Parent or Subsidiary employing or retaining Participant) for the satisfaction of all Federal, state, local and foreign income and employment tax withholding requirements applicable to the Option exercise. Participant acknowledges and agrees that the Company may refuse to honor the exercise and refuse to deliver the Shares if such withholding amounts are not delivered at the time of exercise.

(b) Notice of Disqualifying Disposition of ISO Shares. If the Option granted to Participant herein is an ISO, and if Participant sells or otherwise disposes of any of the Shares acquired pursuant to the ISO on or before the later of (i) the date two (2) years after the Date of Grant, or (ii) the date one (1) year after the date of exercise, Participant shall immediately notify the Company in writing of such disposition. Participant agrees that Participant may be subject to income tax withholding by the Company on the compensation income recognized by Participant.

8. Entire Agreement; Governing Law. The Plan is incorporated herein by reference. The Plan and this Option Agreement constitute the entire agreement of the parties with respect to the subject matter hereof and supersede in their entirety all prior undertakings and agreements of the Company and Participant with respect to the subject matter hereof, and may not be modified adversely to the Participant's interest except by means of a writing signed by the Company and Participant. This Agreement is governed by the internal substantive laws but not the choice of law rules of Texas.

9. No Guarantee of Continued Service. PARTICIPANT ACKNOWLEDGES AND AGREES THAT THE VESTING OF SHARES PURSUANT TO THE VESTING SCHEDULE HEREOF IS EARNED ONLY BY CONTINUING AS A SERVICE PROVIDER AT THE WILL OF THE COMPANY (OR THE PARENT OR SUBSIDIARY EMPLOYING OR RETAINING PARTICIPANT) AND NOT THROUGH THE ACT OF BEING HIRED, BEING GRANTED THIS OPTION OR ACQUIRING SHARES HEREUNDER. PARTICIPANT FURTHER ACKNOWLEDGES AND AGREES THAT THIS AGREEMENT, THE TRANSACTIONS CONTEMPLATED HEREUNDER AND THE VESTING SCHEDULE SET FORTH HEREIN DO NOT CONSTITUTE AN EXPRESS OR IMPLIED PROMISE OF CONTINUED ENGAGEMENT AS A SERVICE PROVIDER FOR THE VESTING PERIOD, FOR ANY PERIOD, OR AT ALL, AND SHALL NOT INTERFERE IN ANY WAY WITH PARTICIPANT'S RIGHT OR THE RIGHT OF THE COMPANY (OR THE PARENT OR SUBSIDIARY EMPLOYING OR RETAINING PARTICIPANT) TO TERMINATE PARTICIPANT'S RELATIONSHIP AS A SERVICE PROVIDER AT ANY TIME, WITH OR WITHOUT CAUSE.

Participant acknowledges receipt of a copy of the Plan and represents that he or she is familiar with the terms and provisions thereof, and hereby accepts this Option subject to all of the terms and provisions thereof. Participant has reviewed the Plan and this Option in their entirety, has had an opportunity to obtain the advice of counsel prior to executing this Option and fully understands all provisions of the Option. Participant hereby agrees to accept as binding, conclusive and final all decisions or interpretations of the Administrator upon any questions arising under the Plan or this Option. Participant further agrees to notify the Company upon any change in the residence address indicated below.

PARTICIPANT	MOLECULAR TEMPLATES, INC.
Signature	By
Print Name	Print Name
Title	Title
Residence Address	

MOLECULAR TEMPLATES, INC.
SIGNATURE PAGE TO STOCK OPTION AGREEMENT

Exhibit A

NOTICE OF EXERCISE OF STOCK OPTION

To: MOLECULAR TEMPLATES, INC.

IMPORTANT NOTICE: This form of Notice of Exercise may only be used at such time as the Company has filed a Registration Statement with the Securities and Exchange Commission under which the issuance of the Shares for which this exercise is being made is registered and such Registration Statement remains effective.

Ladies and Gentlemen:

I hereby exercise my Stock Option to purchase _____ shares (the "Shares") of the common stock, $.001 par value, of Molecular Templates, Inc.(the "Company"), at the exercise price of $_____ per share, pursuant to and subject to the terms of that Stock Option Agreement dated _____, 201_.

I understand the nature of the investment I am making and the financial risks thereof. I am aware that it is my responsibility to have consulted with competent tax and legal advisors about the relevant national, state and local income tax and securities laws affecting the exercise of the Option and the purchase and subsequent sale of the Shares.

I am paying the option exercise price for the Shares as follows:

_____

Please issue the Shares (check one):

☐ to me; or

☐ to me and _____, as joint tenants with right of survivorship,

at the following address:

_____
_____
_____

My mailing address for stockholder communications, if different from the address listed above, is:

_____

_____

_____

Very truly yours,

Participant (signature)

Print Name

Date

Exhibit 21.1

SUBSIDIARIES OF MOLECULAR TEMPLATES, INC.

Subsidiary	**Jurisdiction**
Molecular Templates OpCo, Inc.	Delaware
THLD Enterprises (UK), Limited	United Kingdom

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

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

1) Registration Statement (Form S-3 No. 333-220477) of Molecular Templates, Inc.,

2) Registration Statement (Form S-3 No. 333-207745) of Threshold Pharmaceuticals, Inc.,

3) Registration Statement (Form S-3 No. 333-202043) of Threshold Pharmaceuticals, Inc.,

4) Registration Statements (Form S-8 No. 333-221002) of Molecular Templates, Inc. pertaining to the 2009 Stock Plan, as amended, the 2014 Equity Incentive Plan, as amended, and the Amended and Restated 2004 Employee Stock Purchase Plan,

5) Registration Statements (Form S-8 No. 333-210089) of Threshold Pharmaceuticals, Inc. pertaining to the Amended and Restated 2004 Employee Stock Purchase Plan,

6) Registration Statements (Form S-8 No. 333-202476) of Threshold Pharmaceuticals, Inc. pertaining to the Amended and Restated 2004 Employee Stock Purchase Plan,

7) Registration Statements (Form S-8 No. 333-196249) of Threshold Pharmaceuticals, Inc. pertaining to the 2014 Equity Incentive Plan, and the Amended and Restated 2004 Employee Stock Purchase Plan,

8) Registration Statements (Form S-8 No. 333-187107) of Threshold Pharmaceuticals, Inc. pertaining to the 2004 Amended and Restated Equity Incentive Plan, and the Amended and Restated 2004 Employee Stock Purchase Plan,

9) Registration Statements (Form S-8 No. 333-180149) of Threshold Pharmaceuticals, Inc. pertaining to the 2004 Amended and Restated Equity Incentive Plan, and the Amended and Restated 2004 Employee Stock Purchase Plan,

10) Registration Statements (Form S-8 No. 333-173047 of Threshold Pharmaceuticals, Inc. pertaining to the 2004 Amended and Restated Equity Incentive Plan, and the Amended and Restated 2004 Employee Stock Purchase Plan,

11) Registration Statements (Form S-8 No. 333-167260) of Threshold Pharmaceuticals, Inc. pertaining to the Amended and Restated 2004 Equity Incentive Plan,

12) Registration Statements (Form S-8 No. 333-164865) of Threshold Pharmaceuticals, Inc. pertaining to the 2004 Amended and Restated Equity Incentive Plan, and the Amended and Restated 2004 Employee Stock Purchase Plan,

13) Registration Statements (Form S-8 No. 333-156733) of Threshold Pharmaceuticals, Inc. pertaining to the Amended and Restated 2004 Equity Incentive Plan,

14) Registration Statements (Form S-8 No. 333-143130) of Threshold Pharmaceuticals, Inc. pertaining to the Amended and Restated 2004 Equity Incentive Plan,

15) Registration Statements (Form S-8 No. 333-134598) of Threshold Pharmaceuticals, Inc. pertaining to the Amended and Restated 2004 Equity Incentive Plan, and the 2004 Employee Stock Purchase Plan, and

16) Registration Statements (Form S-8 No. 333-126276) of Threshold Pharmaceuticals, Inc. pertaining to the 2001 Equity Incentive Plan, the 2004 Equity Incentive Plan, and the 2004 Employee Stock Purchase Plan;

of our report dated March 30, 2018, with respect to the consolidated financial statements of Molecular Templates, Inc. included in this Annual Report (Form 10-K) for the year ended December 31, 2017.

/s/ Ernst & Young LLP

Austin, Texas
March 30, 2018

Exhibit 23.2

Consent of Independent Registered Public Accounting Firm

Molecular Templates, Inc.
Austin, Texas

We hereby consent to the incorporation by reference in the Registration Statement on Form S-3 (No. 333-220477) of Molecular Templates, Inc. of our report dated February 22, 2017, except for the effects on the statement of stockholders' deficit of the Exchange Ratio described in Note 3 and the related disclosure within Note 2 and Note 13, as to which the date is March 30, 2018, relating to the financial statements of Molecular Templates, Inc. as of December 31, 2016 and for the year then ended, which appears in this Form 10-K. Our report contains an explanatory paragraph regarding the Company's ability to continue as a going concern.

/s/ BDO USA, LLP

Austin, Texas
March 30, 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, Eric E. Poma, certify that:

1. I have reviewed this Annual Report on Form 10-K of Molecular Templates, 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 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 30, 2018

/s/ ERIC E POMA, PH.D.
Eric E. Pome, Ph.D.
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, Adam Cutler, certify that:

1. I have reviewed this Annual Report on Form 10-K of Molecular Templates, 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 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 30, 2018

/s/ Adam Cutler
Adam Cutler
Chief Financial Officer

Exhibit 32.1

Molecular Templates, Inc

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 Molecular Templates, Inc. (the "Company") on Form 10-K for the year ended December 31, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Eric E. Poma, Chief Executive Officer and Chief Scientific Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

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

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

Date: March 30, 2018

/s/ ERIC E. POMA, Ph.D.
Eric E. Poma, Ph.D.
Chief Executive Officer and Chief Scientific 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

Molecular Templates, Inc

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 Molecular Templates, Inc. (the "Company") on Form 10-K for the year ended December 31, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Adam Cutler, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

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

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

Date: March 30, 2018

/s/Adam Cutler
Adam Cutler
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.