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, 2018

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: 0-21990

Mateon Therapeutics, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**13-3679168**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
701 Gateway Boulevard, Suite 210 South San Francisco, CA	**94080**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (650) 635-7000

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

Title of Each Class	**Name of Each Exchange on Which Registered**
None	

Securities registered pursuant to Section 12(g) of the Exchange Act:
Common stock, par value $0.01 per share

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 Exchange Act. Yes ☐ No ☒

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) 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 an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

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

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

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

The aggregate market value of the registrant's voting and non-voting common stock held by non-affiliates of the registrant (without admitting that any person whose shares are not included in such calculation is an affiliate) computed by reference to the price at which the common stock was last sold, as of June 29, 2018 was approximately $8,042,000.

As of April 10, 2019, the aggregate number of outstanding shares of common stock of the registrant was 41,419,934.

DOCUMENTS INCORPORATED BY REFERENCE

None.

SAFE HARBOR FOR FORWARD-LOOKING STATEMENTS UNDER THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995

This Annual Report on Form 10-K ("Annual Report") 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, that involve substantial risks and uncertainties. We generally identify forward-looking statements by terminology such as "may," "will," "should," "expect," "plan," "anticipate," "could," "would," "intend," "target," "aim," "project," "believe," "estimate," "predict," "potential," "seek," "indicate," or "continue" or the negative of these terms or other similar words, although not all forward-looking statements contain these words. Forward-looking statements include, but are not limited to, statements regarding our or our management's expectations, hopes, beliefs, intentions or strategies regarding the future, such as our liquidity and our expectations regarding our needs for and ability to raise additional capital; our ability to continue as a going concern; our estimates regarding anticipated operating losses, future performance, future revenues and projected expenses; our ability to select and capitalize on commercially desirable product opportunities as a result of limited financial resources; our ability to manage our expenses effectively and raise the funds needed to continue our business; our ability to retain the services of our current executive officers, directors and principal consultants; the competitive nature of our industry and the possibility that our products or product candidates may become obsolete; our ability to obtain and maintain regulatory approval of our existing products and any future products we may develop; the clinical development of and the process of commercializing OXi4503 (which is also known as combretastatin A1-phosphate), CA4P (which is also known as combretastatin A4-phosphate and/or fosbretabulin tromethamine, which is generally shortened to fosbretabulin); the combination of OXi4503 with cytarabine and the combination of CA4P with immuno-oncology agents; the initiation, timing, progress and results of our preclinical and clinical trials, research and development programs; regulatory and legislative developments in the United States and foreign countries; the timing, costs and other limitations involved in obtaining regulatory approval for any product; the further preclinical or clinical development and commercialization of our product candidates; our ability to obtain and maintain orphan drug exclusivity for some of our product candidates; the potential benefits of our product candidates over other therapies; our ability to enter into and maintain any collaboration with respect to product candidates; our ability to continue to develop or commercialize our products or product candidates in the event any license agreements in place with third parties expire or are terminated; the performance and conduct of third parties, including our third-party manufacturers and third party service providers used in our clinical trials; our ability to obtain and maintain intellectual property protection for our products and operate our business without infringing upon the intellectual property rights of others; the potential liability exposure related to our products and our insurance coverage for such exposure; the successful development of our sales and marketing capabilities; the size and growth of the potential markets for our products and our ability to serve those markets; the rate and degree of market acceptance of any future products; the volatility of the price of our common stock; the ability to achieve secondary trading of our stock in certain states; the dilutive effects of potential future equity issuances; our expectation that no dividends will be declared on our common stock in the foreseeable future; our ability to maintain an effective system of internal controls; the payment and reimbursement methods used by private or governmental third-party payers; our ability to retain adequate staffing levels; unfavorable global economic conditions; a failure of our internal computer systems or those of our contractors and consultants; potential misconduct or other improper activities by our employees, contractors or consultants; the ability of our business continuity and disaster recovery plans to protect us in the event of a natural disaster; and other factors discussed elsewhere in this Annual Report or any document incorporated by reference herein or therein.

The forward-looking statements contained in this Annual Report are based on our current expectations and beliefs concerning future developments and their potential effects on us. There can be no assurance that future developments affecting us will be those that we have anticipated. These forward-looking statements involve a number of risks, uncertainties (some of which are beyond our control) or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by these "forward-looking statements." Should one or more of these risks or uncertainties materialize, or should any of our assumptions prove incorrect, actual results may vary from those projected in these forward-looking statements. The sections captioned "Risk Factors" as well as other sections in this Annual Report or incorporated by reference into this Annual Report discuss some of the factors that could contribute to these differences. The forward-looking statements made in this Annual Report relate only to events as of the date on which the statements are made. We undertake no obligation to update or revise any forward- looking statements, whether as a result of new information, future events or otherwise, except as may be required under applicable securities laws.

Our product candidates are undergoing clinical development and have not been, nor may they ever be, approved for marketing by any regulatory agency, including the United States Food and Drug Administration, or the FDA, or competent authorities nor marketed anywhere in the world.

This Annual Report also contains market data related to our business and industry. These market data include projections that are based on a number of assumptions. While we believe these assumptions to be reasonable and sound as of the date of this Annual Report, if these assumptions turn out to be incorrect, actual results may differ from the projections based on these assumptions. As a result, the markets for our product candidates may not grow at the rates projected by these data, or at all. The failure of these markets to grow at these projected rates may have a material adverse effect on our business, results of operations, financial condition and the market price of our common stock.

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PART I

ITEM 1. BUSINESS

Our Business

Overview

We are a clinical stage biopharmaceutical company developing small molecule drugs for the treatment of cancer. Our goal is to advance our drug candidates into late stage pivotal clinical trials and either sell marketing rights to a larger pharmaceutical company or seek FDA approval ourselves. However, for over the past year we have been operating under significant capital constraints, which has curtailed our ability to achieve meaningful progress in either of our clinical programs.

The two primary investigational drug candidates of ours are called CA4P and OXi4503. CA4P is an abbreviation for combretastatin A4-phosphate, and it is also referred to as fosbretabulin, fosbretabulin tromethamine and ZYBRESTAT. OXi4503 is a molecule that is closely related to CA4P, and this product candidate is also referred to as CA1P and combretastatin A1-phosphate.

We are seeking to develop CA4P as an immuno-oncology agent and seeking to develop OXi4503 as a treatment for acute myeloid leukemia and myelodysplastic syndromes.

CA4P as an Immuno-oncology Agent

Over the last several years, there have been significant advances in cancer immunotherapy, which makes use of the immune system to treat cancer. Immuno-oncology agents stimulate the body's immune system to fight cancer cells, resulting in tumor cell death and tumor regressions in patients who otherwise would not have responded to therapy. Despite these advances, current FDA-approved immuno-oncology agents have significant limitations when used alone to treat cancer, since relatively few patients achieve a durable clinical response following treatment. CA4P has the potential to increase the efficacy of these immuno-oncology agents – it has been shown in animal models of several different tumors to improve immune responses that lead to tumor cell death, resulting in increased tumor regressions compared to immune-oncology agents alone.

CA4P causes rapid and widespread tumor cell necrosis. This tumor-specific necrosis stimulates the immune system against the tumor. Animal models also show that CA4P significantly enhances the presence and activity of cancer-fighting T-cells within tumors, resulting in increased tumor cell death and tumor regressions. Given these data, we believe CA4P may result in more and/or better clinical responses in certain cancers when combined with immuno-oncology agents, including in patients who either have not experienced a response to therapy, or in patients who have initially responded but subsequently progressed after treatment with immuno-oncology agents alone.

The next step in the process of establishing CA4P as a safe and effective immuno-oncology agent will be to initiate a clinical study in a disease in which immuno-oncology agents are used as standard therapy. This clinical study would evaluate CA4P in combination with currently approved immuno-oncology agents in patients with advanced cancer who have previously failed treatment. We believe that the existing human safety database for CA4P, which includes over 500 patients, will help expedite the development timeline going forward.

Our initial immuno-oncology preclinical studies were completed in 2016. One of these studies combined CA4P with an anti-CTLA4 antibody, an approved and well-known immuno-oncology agent, in an EMT-6 mammary tumor model. This study showed that 7 out of 8 mice receiving a combination of CA4P and an anti-CTLA4 antibody experienced complete remission of their tumors, compared to only 1 of 8 in the CA4P monotherapy arm and 2 of 8 in the anti-CTLA4 antibody monotherapy arm.

Three of four follow-up preclinical studies confirmed that CA4P combined with immuno-oncology agents could delay tumor growth. These follow-up studies were conducted in a CT26 colon cancer model, a larger tumor EMT-6 mammary cancer model, and a C3H mammary cancer model. Studies in a CT-26 colon cancer animal model using CA4P combined with anti-CTLA4 antibodies demonstrated a 77% reduction in tumor size compared to immuno- oncology agents alone, and an 89% reduction in tumor size compared to control. This large tumor model also showed a survival benefit for the animals receiving combination therapy, with all animals in the combination surviving at the end of the study, compared to none on control and only half the animals receiving immuno-oncology agents alone. Initial data in an MC38 colon cancer model showed that when CA4P is combined with an anti-PD1 antibody there was a 53% reduction in tumor volume at the end of the study, compared with a 16% reduction for CA4P alone and a 15% reduction for the anti-PD1 antibody alone.

Additional analyses of changes induced within tumors following combination therapy have shown that CA4P increases tumor-fighting white blood cell counts, T-cells and cytotoxic T-cells compared to immuno-oncology agents alone. Tumor necrosis with the combination of CA4P and immuno-oncology agents is nearly double the necrosis with only immuno-oncology agents (63.9% compared to 32.8%, control = 25.8%).

The overall data from all these studies provides evidence that CA4P may enhance the activity of immuno-oncology agents for the treatment of cancer, including anti-CTLA4 antibodies and anti PD-1 antibodies. We believe CA4P offers the following potential benefits when used in combination with immuno-oncology agents:

- A promising approach for enhancing the efficacy of immuno-oncology agents: CA4P induces rapid tumor cell death and stimulation of the immune system. It does this by blocking tumor blood flow after binding to and altering the shape of cells lining the tumor blood vessels, resulting in increased tumor cell death and tumor regressions. This is a promising approach for boosting the efficacy of immuno-oncology agents.
- Potential to be used in many different cancers: Because CA4P works by obstructing tumor blood flow, it has the potential to be used in any tumor type where there is a large number of blood vessels upon which the growth of the tumor cells depends.
- A large clinical safety database supports its use in clinical trials: Over 500 patients have been treated with CA4P to date in clinical trials. These trials have shown CA4P to be generally well-tolerated, supporting the overall safety of CA4P and the initiation of additional clinical trials in new areas, including in immuno-oncology.

Our goal for the immuno-oncology program is to establish CA4P as a safe and effective therapy for the treatment of advanced melanoma when it is combined with the checkpoint inhibitor anti-PD-1. To this end we plan to initiate and conduct a clinical trial in a setting where patients with advanced melanoma who have previously failed therapy with anti-PD-1 receive continued anti-PD-1 therapy in combination with CA4P. We have chosen this patient population because they historically have a very poor prognosis regardless of treatment, and consequently any responses to the combination including CA4P could be due to the addition of CA4P. We believe that CA4P has the potential to increase the beneficial clinical effects of anti-PD-1 monotherapy in these patients. We are in the process of completing the protocol for this study prior to its submission to regulatory authorities in Italy, which is where our anticipated principal investigator is located. An additional site, located in the United Kingdom, is also planned for this study. We will require additional funding before we will be able to treat any patients in this planned clinical trial.

OXi4503 for Acute Myeloid Leukemia and Myelodysplastic Syndromes

Acute myeloid leukemia, or AML, is a cancer of the myeloid blood cells, with approximately 21,000 new cases each year in the U.S. and approximately 10,500 deaths. AML is characterized by the rapid growth of abnormal white blood cells that pollute bone marrow and interfere with the production of normal blood cells. OXi4503 has been granted orphan drug designation in both the U.S. and the European Union for the treatment of AML. In addition, OXi4503 has received Fast Track designation from the FDA for the treatment of AML.

Patients with relapsed/refractory AML are most commonly treated with chemotherapy, and generally have a poor prognosis, with a one-year survival of only 29% after their first relapse. Over the past 20 years, no new therapies have consistently improved patient outcomes in this indication when compared to chemotherapy.

Myelodysplastic Syndromes, or MDS, are a group of cancers in which immature blood cells in the bone marrow do not mature and thus never become healthy blood cells. There are currently few available treatments for MDS.

Our most clinically advanced compound, OXi4503, is in development as a potential new treatment for relapsed/refractory AML/MDS. OXi4503 has been demonstrated in preclinical studies to work in AML by disrupting tumor blood vessels in the bone marrow, forcing otherwise-dormant leukemic stem cells, which are attached to these tumor blood vessels, into circulation in the blood stream as well as into the active cell cycle, where they become vulnerable to chemotherapy. OXi4503 has also been demonstrated to be cytotoxic itself and kill leukemic cells directly after it has been metabolized by enzymes located within leukemic cells.

In preclinical studies, OXi4503 has been shown to enhance the efficacy of cytarabine, idarubucin, azacitidine, and decitabine, which are each commonly-used chemotherapeutic agents for the treatment of many cancers, including AML. In early clinical studies, OXi4503 has shown complete responses in high risk patients both as a monotherapy and in combination with cytarabine.

Study OX1222 is a clinical trial using escalating doses of OXi4503 in combination with cytarabine to treat relapsed/ refractory AML which we initiated in late 2015. In the fifth dose cohort of OX1222, two of four patients experienced complete remissions of their disease after just one cycle of treatment with 9.76 mg/m2 of OXi4503. In earlier, lower dose cohorts of OX1222 (doses ranging from 3.75 mg/m2 to 7.81 mg/m2), there were three patients with complete remissions, each of which occurred following two cycles of treatment, and two additional patients with meaningful AML blast count reductions.

In 2018 we initiated the sixth dose cohort and treated four patients with 12.2 mg/m2 of OXi4503. Among these four patients we observed two potential dose-limiting toxicities (DLTs). These two events consist of one patient experiencing hypotension shortly following initial treatment with OXi4503 and another patient experiencing acute hypoxic respiratory failure approximately two weeks after receiving OXi4503 and cytarabine. Both events were deemed “possibly-related” to OXi4503, and both patients recovered following treatment. The protocol for Study OX1222 generally defines a DLT as any grade 3 serious adverse event (SAE) where a relationship to OXi4503 cannot be ruled out.

Following the potential DLTs, the FDA placed OX1222 under a partial clinical hold, which prevented us from treating additional patients at 12.2 mg/m2 until we and the FDA evaluate additional safety data on patients receiving 9.76 mg/m2 of OXi4503. Three additional patients have enrolled into the trial, and each of them completed one cycle of treatment at 9.76 mg/m2 of OXi4503, which was the same as the level used in the fifth cohort. One of these patients experienced a meaningful AML blast count reduction over 50% from baseline after a single cycle of therapy, but for whom we were not able to continue treatment. The other two patients who were newly enrolled into the 9.76 mg/m2 dose cohort did not have AML blast count reductions.

We believe OXi4503 offers the following potential benefits:

- A unique approach for AML: We believe that disrupting bone marrow tumor vessels for the treatment of AML is a new approach for a difficult to treat disease, with few competing clinical programs. Data show that OXi4503 destroys the protection tumor blood vessels offer to leukemic stem cells, resulting in the release of these leukemic stem cells into the bloodstream and thereby increasing their exposure and vulnerability to chemotherapy;
- Dual mechanism of action: When metabolized, OXi4503 becomes both a vascular disrupting agent and a cytotoxic compound that targets and destroys malignant cells of myeloid lineage;
- A safer alternative to high dose chemotherapy: Many patients, especially those that are older, such as those over age 60, cannot tolerate high dose chemotherapy used in the treatment of AML. These patients generally resort to more tolerable but less efficacious therapies. OXi4503 to date has been observed to be relatively well tolerated in clinical studies when used in combination with moderate dose chemotherapy (cytarabine), and therefore may offer a new and better alternative for these patients; and
- Potential to be used with many therapies: Current AML treatment is highly variable, and many patients receive multiple classes of drugs during the course of their disease. We believe that OXi4503 has the potential to enhance the effect of many common AML therapies.

Despite the signs of efficacy that have been demonstrated in Study OX1222 and the above-noted potential benefits that OXi4503 offers to patients with AML and MDS, we have recently decided to halt enrollment of additional patients into this clinical trial while we continue to seek outside licensees or investors that are able to fund further development of OXi4503.

Our Strategy and Development Plan

We have been operating with significant capital constraints for well over a year, and for this time period we have been seeking to secure sufficient funding to continue our operations while we simultaneously seek to advance our two investigational drugs for the treatment of cancer. Subject to our ability to secure additional capital, we would seek to further develop CA4P as an immuno-oncology agent and OXi4503 as a treatment for AML/MDS. However, our inability to access capital may significantly impair our ability to develop these compounds, as it has to date. If we are able to advance CA4P as an immuno-oncology program, our aim will be to obtain our first clinical data of CA4P in combination with one or more currently approved immuno-oncology agents. If we are able to advance OXi4503 as a treatment for AML and/or MDS, our aim would be to obtain additional clinical data on patients with the disease.

We continue to discuss CA4P and OXi4503 collaboration opportunities with other biopharmaceutical companies, although to date have not secured any agreements with companies that are willing to purchase the products from us or license the development and commercialization rights. We intend to continue to seek a partner to acquire the marketing rights to our product candidates and to finance further clinical studies and will seek to complete a transaction if we are able to reach mutual agreement on terms.

In addition to entering into a transaction that would provide funding for the further development of our product candidates, other elements of our development strategy would currently include:

- Initiating a clinical trial of CA4P in combination with an immuno-oncology agent: Based on preclinical data generated to date and support of two well-known immuno-oncology clinical investigators, we have developed a protocol for a clinical trial that would be the first human clinical trial combining CA4P and an approved immuno-oncology agent. This trial is designed to make initial determinations of whether the combination results in improved patient outcomes, including safety, overall survival, progression free survival, objective response rate, tumor size and other parameters.
- Continuing to evaluate OXi4503 in a clinical trial: We have completed six ascending dose cohorts of OXi4503 in combination with cytarabine in Study OX1222 in patients with relapsed/refractory AML and/or MDS. In the highest dose cohort, the sixth cohort of the study, we observed potential safety signals which triggered stopping rules for the study and resulted in a partial clinical hold from the U.S. Food and Drug Administration until we and the FDA assess additional safety data, particularly at the fifth dose cohort level. In the fifth dose cohort of OX1222, we have observed the best potential signs of efficacy to date in the trial and believe treatment of additional patients would provide additional evidence regarding the efficacy of OXi4503 in these indications.

Investigator Sponsored Study in Neuroendocrine Tumors

Approximately 14,000 patients in the U.S. are diagnosed with neuroendocrine tumors, or NETs, each year. Since patients with NETs can have prolonged survival rates of over 5 years, it is estimated that the overall prevalence is much higher, approximating 100,000 patients in the U.S. These tumors can produce increased amounts of vasoactive substances including hormones, many of which are biologically active and can result in debilitating symptoms including flushing, diarrhea, weight loss and, less frequently, bronchoconstriction and heart failure. It is our belief, based on the available preclinical data, that by reducing blood flow to these tumors using CA4P, we may be able to reduce the production of tumor-derived substances, including the biologically active hormones.

We have completed a phase 2 monotherapy clinical trial of CA4P in 18 patients with gastrointestinal or pancreatic NETs and elevated biomarkers. One patient (6%) experienced significant symptomatic improvement as measured by ECOG Status and had a partial response per investigator-assessed RECIST criteria, and an additional 7 patients (39%) had stable disease. In addition, a majority of patients (53%) experienced an improvement in patient-reported quality of life. A statistically significant mean change in biomarkers from baseline, the primary endpoint of the study, was not achieved due to the small sample size along with a high intra- and inter-patient variability observed in the biomarkers. A total of 7 patients were enrolled in a follow-up trial, of which 5 patients (71%) had stable disease, including one that continued for 14 months. The partial response and stable disease analyses, as well as other measures from the trial, suggest that CA4P monotherapy has activity in this indication. Based on the evidence of efficacy observed in this trial, plus an understanding of the benefits of vascular-targeted combination therapy, a lead investigator in this trial has sponsored a 17-patient study in NETs using CA4P in combination with everolimus (AFINITOR®, marketed by Novartis), an anti-angiogenic agent which is already approved and commonly used in this indication. We expect preliminary results from this clinical study to be available in April 2019.

CA4P has been granted orphan drug designation for the treatment of neuroendocrine tumors in both the U.S. and the European Union.

Glioblastoma Multiforme

We are interested in exploring recurrent glioblastoma multiforme, or GBM, as an additional indication for CA4P because:

- we have preclinical data that demonstrate a positive treatment effect in GBM tumor models,
- GBM tumors are highly vascular and thus we believe will be quite susceptible to CA4P's mechanism of action,
- there are currently no adequate therapies for most GBM patients, and accordingly the indication has a high unmet medical need,
- bevacizumab is approved for patients with progressive disease in this indication following prior therapy and combination studies of CA4P and bevacizumab in other cancers has shown meaningful benefits, and
- rapid enrollment would be expected in clinical trials for this indication.

CA4P has been granted orphan drug designation for the treatment of glioma in the United States. If funds become available for us to initiate and complete a clinical trial in GBM, we expect that we would pursue a trial. However, due to our lack of capital we currently do not plan to initiate a GBM or any other clinical trial until sufficient capital is available.

Vascular Disrupting Agents: Background

According to Cancer Research UK, a non-profit cancer research organization in the United Kingdom, nearly 90% of all cancers are dependent upon a continually evolving vascular supply for their growth and survival. Vascular-targeted therapies, such as CA4P and OXi4503, are designed to interfere with a tumor's vascular supply.

As illustrated in the table below, there are differences between our vascular targeted therapies and anti-angiogenic drugs which act via a different mechanism to produce potentially complementary biological and anti-vascular effects.

	Anti-Angiogenic Drugs	CA4P	OXi4503
Molecule Characteristics	Bevacizumab, ranibizumab are monoclonal antibodies (MABs) Sorafenib, sunitinib, pegaptanib, pazopanib, cediranib, axitinib, etc. are small molecule tyrosine kinase inhibitors (TKIs)	Small molecule reversible inhibitor of tubulin polymerization	Small molecule reversible inhibitor of tubulin polymerization Also forms cytotoxic metabolite (orthoquinone) via oxidation
Target	Tumor rim	Tumor core	Tumor core Metabolite targets malignant cells of myeloid lineage
Mechanism	MABs bind to VEGF, thereby rendering it inactive TKIs inhibit the VEGF receptor, thereby inhibiting its activation	Rapid and selective binding to tubulin, which destabilizes microtubules, changes the shape of endothelial cells and disrupts the cell junctional protein VE-cadherin	Similar to CA4P OXi4503 also produces an orthoquinone metabolite that has an anti-proliferative effect on leukemic cells

	Anti-Angiogenic Drugs	CA4P	OXi4503
Biological Effect	Continuously inhibit pro-angiogenic growth factor signaling (e.g., VEGF) to prevent formation and growth of new blood vessels throughout the tumor rim	Occludes pre-existing abnormal tumor blood vessels that feed tumors	Similar to CA4P OXi4503 also temporarily mobilizes hematopoietic and leukemic cells from the bone marrow
Rapidity of Effect	Weeks	Hours	Hours
Target tissue	All angiogenesis	Selective for abnormal vasculature characteristically seen in tumor blood vessels	Similar to CA4P OXi4503 also makes leukemic cells mobilized from the bone marrow vulnerable to the effects of its orthoquinone metabolite
Plasma Half-life	MABs remain in circulation for days or weeks TKI half-lives vary, average range is 4-12 hours	Approximately 4 hours	Approximately 2 hours OXi4503 metabolite half-life is approximately 20 hours
Side Effects	Chronic hypertension with long-term use; Acute-impairment in wound healing; Hemorrhage, hemoptysis, gastrointestinal perforation, proteinuria, nephrotic syndrome, thromboembolic events, etc.	Transient blood pressure increases; Tumor pain, nausea, hematological adverse events; Overlapping with anti-angiogenics: no cumulative toxicities observed	Transient acute blood pressure increases; Tumor pain, nausea, vomiting, headache, fatigue; Effects on hematopoiesis and white blood cell counts; In AML – similar to solid tumors with more pronounced effects on coagulation and hematopoiesis

We believe our drug candidates act on tumor blood vessels via two complementary mechanisms, tubulin depolymerization and disengagement of the junctional protein VE-cadherin, which cause a change in the shape of tumor vascular endothelial cells, tumor vessel occlusion, and the subsequent blockage of blood-flow to the tumor, which deprives the tumor of oxygen and nutrients essential for survival.

In vitro studies have demonstrated that our drug candidates act in a reversible fashion on tubulin inside newly-formed and growing endothelial cells, such as the vascular endothelial cells comprising tumor vasculature. By binding to the tubulin, our candidates are able to alter the structural framework that normally maintains the cells' flat shape. When this occurs, the shape of the cells changes from flat to round, resulting in physical blockage of the blood vessels. The resulting shutdown in blood-flow then deprives tumor cells of the oxygen and nutrients necessary for maintenance and growth and also prevents tumor cells from being able to excrete toxic metabolic waste products. The consequence of the tumor blood vessel blockage is extensive necrosis (cell death) within the tumor.

Preclinical research, published in the November 2005 issue of the Journal of Clinical Investigation, showed that our drug candidates also disrupt the molecular engagement of VE-cadherin, a junctional protein important for endothelial cell survival and function. The authors of the research article conclude that this effect only occurs in endothelial cells which lack contact with smooth muscle cells, a known feature of abnormal vasculature associated with tumors and other disease processes. The disengagement of VE-cadherin leads to endothelial cell detachment, which in turn, can cause permanent physical blockage of vessels.

Clinical study results and additional preclinical studies indicate that our investigational drugs exert their anti-vascular effects rapidly, within hours of administration, and the half-life of the active form of our drugs in humans is approximately two-four hours. In part because the half-life is relatively short, the effects on tubulin are reversible. However, the pharmacodynamic effect lasts for weeks, so our agents are typically administered no more frequently than once per week. The side-effects are typically transient in nature, limited to the few hours following administration when the active form is in the body in significant concentrations.

Side-effects associated with our investigational drugs are generally transient and manageable. The most frequent side-effects include acute blood pressure increases, infusion-related side effects such as nausea, vomiting, headache and fatigue, and tumor pain, which is consistent with the drug's mechanism-of-action. The acute blood pressure increases are often manageable by controlling underlying hypertension or treating with short-acting anti-hypertensives prior to infusion. The incidence of serious cardiovascular side-effects such as angina and myocardial ischemia observed across all studies to date (including early studies in which hypertension management and prevention was not employed) was less than 3%, a frequency comparable to that reported with approved anti-angiogenic agents such as bevacizumab, sunitinib and sorafenib.

Collaborative Research and Development Arrangements

We have entered into a technology license from Arizona State University, or ASU, for rights to combretastatins, which includes CA4P and OXi4503. The ASU license is an exclusive, world-wide, royalty-bearing license for the commercial development, use and sale of products or services covered by certain patent rights to particular combretastatins. Combretastatins were originally isolated from the bark of the South African Bush Willow tree by researchers from Arizona State University but are now created by synthetic means and have tubulin-dependent anti-vascular and anti-proliferative properties. Under the ASU license, we have the right to grant sublicenses. ASU is entitled to single-digit royalty payments under the license agreement during the term of the patents licensed from ASU. We bear the costs of preparing, filing, prosecuting and maintaining all patent applications under the ASU license. Under the license agreement, we have agreed to diligently proceed with the development, manufacture and sale of products using the licensed technology. ASU has the first responsibility of enforcing patents under the license agreement. License payments made to ASU to date have amounted to $2,700,000, with no further license payments due on the drug candidates we are developing. The agreement remains in force until the expiration of the last to expire patent subject to the ASU license. Either party may terminate the ASU license agreement upon material default or bankruptcy of the other party. In addition, we may terminate the agreement if we determine that filing for regulatory approval is not warranted or economically feasible or upon two months' written notice.

We also have an exclusive, world-wide, royalty-bearing license from Bristol-Myers Squibb, or BMS, for commercial development, use and sale of products or services covered by certain patent rights to particular combretastatins, including among others, CA4P. Under the BMS license, we have the right to grant sublicenses, and BMS is entitled to low single-digit royalty payments for all commercial sales plus any remuneration we receive for sale of CA4P under named patient or compassionate use programs. All licensing fees and milestone payments under the BMS license, in the aggregate amount of $1,080,000, have been paid. We bear the costs of preparing, filing, prosecuting and maintaining all patent applications under the BMS license and have a right, but not a duty, of enforcing patents covered by the license. Either party may terminate the BMS license upon material default of the other party. The term of the BMS license ends upon the expiration of the licensed patents. The latest United States patent licensed under the BMS license is scheduled to expire in December 2021, excluding a patent term extension available under the Hatch-Waxman Act.

Company Background

We were originally incorporated in 1988 in New York as OXiGENE, Inc. and reincorporated in Delaware in 1992. In 2016, we changed our name to Mateon Therapeutics, Inc. Our principal corporate office is in the United States at 701 Gateway Boulevard, Suite 210, South San Francisco, California 94080 (telephone: 650-635-7000). Our Internet address is www.mateon.com. Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports, are available to you free of charge through the "Investors & News" section of our web site as soon as reasonably practicable after such materials have been electronically filed with, or furnished to, the Securities and Exchange Commission. Information contained on, or that can be accessed through, our web site is not and shall not be deemed to be a part of this Annual Report on Form 10-K.

REGULATORY MATTERS

Government Regulation and Product Approval

Government authorities in the United States and other countries extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, labeling, packaging, storage, record-keeping, promotion, advertising, distribution, marketing and export and import of products such as those we are developing. Our drug candidates must be approved by the FDA through the New Drug Application, or NDA, process before they may be legally marketed in the United States.

U.S. Drug Development Process

In the United States, the FDA regulates drugs under the Federal Food, Drug, and Cosmetic Act, or FDCA, and implementing regulations. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local, and foreign statutes and regulations require the expenditure of substantial time and financial resources. Failure to comply with the applicable United States requirements at any time during the product development process, approval process or after approval, may subject an applicant to administrative or judicial sanctions. These sanctions could include the FDA's refusal to review or approve pending applications, withdrawal of an approval, a clinical hold, warning letters, product recalls, product seizures, total or partial suspension of production or distribution injunctions, fines, refusal of government contracts, restitution, disgorgement, or civil or criminal penalties. Any agency or judicial enforcement action could have a material adverse effect on us. The process required by the FDA before a drug may be marketed in the United States generally involves the following:

- completion of preclinical laboratory tests, animal studies and formulation studies according to Good Laboratory Practices (GLP) or other applicable regulations;
- submission to the FDA of an Investigational New Drug Application, or IND, which must be first approved by the FDA before human clinical trials may begin;
- performance of adequate and well-controlled human clinical trials according to Good Clinical Practices (GCP) to establish the safety and efficacy of the proposed drug for its intended use;

- submission to the FDA of an NDA;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the drug is produced to assess compliance with current good manufacturing practice, or cGMP, to assure that the facilities, methods and controls are adequate to preserve the drug's identity, strength, quality and purity;
- satisfactory completion of FDA inspections of clinical sites and GLP toxicology studies; and
- FDA review and approval of the NDA.

The testing and approval process requires substantial time, effort and financial resources, and we cannot be certain that any approvals for our product candidates will be granted on a timely basis, if at all.

Once a pharmaceutical candidate is identified for development, it enters the preclinical testing stage. Preclinical tests include laboratory evaluations of product chemistry, toxicity and formulation, as well as animal studies. An IND sponsor must submit the results of the preclinical tests, together with manufacturing information and analytical data, to the FDA as part of the IND. The sponsor will also include a protocol detailing, among other things, the objectives of the clinical trial, the parameters to be used in monitoring safety, and the effectiveness criteria to be evaluated, if the first phase lends itself to an efficacy evaluation. Preclinical testing continues even after the IND is submitted. The IND becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, places the clinical trial on a clinical hold. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. Clinical holds also may be imposed by the FDA at any time before or during clinical trials due to safety concerns or non-compliance.

All clinical trials must be conducted under the supervision of qualified investigators in accordance with GCP regulations. These regulations include the requirement that all research subjects provide informed consent. Further, an institutional review board, or IRB, must review and approve the plan for any clinical trial before it commences at any institution. An IRB considers, among other things, whether the risks to individuals participating in the trials are minimized and are reasonable in relation to anticipated benefits. The IRB also approves the information regarding the trial and the consent form that must be provided to each trial subject or his or her legal representative and must monitor the clinical trial until completed.

Each new clinical protocol must be submitted to the IND for FDA review, and to the IRBs for approval. Protocols detail, 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 efficacy in Phase 2 and 3 clinical trials.

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

- Phase 1: The drug is initially introduced into human subjects and tested for safety, dosage tolerance, absorption, metabolism, distribution and excretion.
- Phase 2: Involves clinical trials in a limited patient population to identify possible adverse effects and safety risks, to evaluate preliminary efficacy of the product for specific targeted diseases and to determine dosage tolerance and optimal dosage.
- Phase 3: Clinical trials are undertaken to further evaluate dosage, clinical efficacy and safety in an expanded patient population. These studies are intended to establish the overall risk-benefit ratio of the product and provide, if appropriate, an adequate basis for product labeling.

Progress reports detailing the results of the clinical trials must be submitted at least annually to the FDA. IND Safety Reports must be submitted to the FDA, IRBs and the investigators for (a) any suspected adverse reaction that is both serious and unexpected; (b) any findings from epidemiological studies, pooled analysis of multiple trials, or clinical trials (other than those already reported in (a)); (c) any findings from animal or *in vitro* testing, whether or not conducted by the sponsor, that suggest a significant risk in humans exposed to the drug, such as reports of mutagenicity, teratogenicity, or carcinogenicity or reports of significant organ toxicity at or near the expected human exposure; and (d) any clinically important increase in the rate of a serious suspected adverse reaction over that listed in the protocol or investigator brochure. Phase 1, phase 2, and phase 3 testing may not be completed successfully within any specified period, if at all. The FDA or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the research subjects or patients are being exposed to an unacceptable health risk. Similarly, an IRB can suspend or terminate approval of a clinical trial at its institution if the clinical trial is not being conducted in accordance with the IRB's requirements or if the drug has been associated with unexpected serious harm to patients.

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

U.S. Review and Approval Processes

The results of product development, preclinical studies and clinical trials, along with descriptions of the manufacturing process, analytical tests conducted on the chemistry of the drug, proposed labeling, and other relevant information are submitted to the FDA as part of an NDA requesting approval to market the product. The submission of an NDA is subject to the payment of user fees; a waiver of such fees may be obtained under certain limited circumstances, which may include orphan drug status and the first NDA application for a company.

In addition, under the Pediatric Research Equity Act, or PREA, an NDA or supplement to an NDA must contain data to assess the safety and effectiveness 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 drug is safe and effective. The FDA may grant deferrals for submission of data or full or partial waivers. Unless otherwise required by regulation, PREA does not apply to any drug for an indication for which orphan designation has been granted.

The FDA reviews all NDAs submitted to ensure that they are sufficiently complete for substantive review before it accepts them for filing. The FDA may request additional information rather than accept an NDA for filing. In this event, the NDA must be resubmitted with the additional information. The resubmitted application also is subject to review before the FDA accepts it for filing. Once the submission is accepted for filing, the FDA begins an in-depth substantive review. The FDA also may refer the NDA to an advisory committee for review, evaluation and recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendation of an advisory committee, but it generally follows such recommendations. The approval process is lengthy and difficult and the FDA may refuse to approve an NDA at its discretion or the FDA may require additional clinical or other data and information. Even if such additional data and information are submitted, the FDA may ultimately decide that the NDA does not satisfy its criteria for approval. Data obtained from clinical trials are not always conclusive, and the FDA may interpret data differently than we or others may interpret the same data. The FDA may issue a complete response letter, which may require additional clinical or other data or impose other conditions that must be met in order to obtain approval of the NDA. The FDA reviews an NDA to determine, among other things, whether a product is safe and effective for its intended use and whether its manufacturing is cGMP-compliant to assure and preserve the product's identity, strength, quality and purity. Before approving an NDA, the FDA will generally inspect the facility or facilities where the product is manufactured. The FDA will also generally inspect selected clinical sites that participated in the clinical studies and may inspect the testing facilities that performed the GLP toxicology studies cited in the NDA.

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

If a product receives regulatory approval, the approval may be limited to specific diseases or patient subpopulations and dosages or the indications for use may otherwise be limited, which could restrict the commercial value of the product. In addition, approval by the FDA may include a requirement for phase 4 testing, which involves clinical trials designed to further assess a drug's safety and effectiveness, and the FDA may require testing and surveillance programs to monitor the safety of approved products which have been commercialized.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan drug designation to a drug intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States. 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 drug designation subsequently receives the first FDA approval for the disease for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications to market the same drug for the same indication for seven years, except in very limited circumstances.

In the European Union and Japan, orphan drug exclusivity regulations provide for 10 years of market exclusivity.

CA4P has been awarded orphan drug status by the FDA for the treatment of anaplastic, medullary, Stage IV papillary and Stage IV follicular thyroid cancers, ovarian cancer, neuroendocrine tumors and glioma. OXi4503 has been awarded orphan drug status by the FDA for the treatment of acute myelogenous leukemia.

CA4P has also been awarded orphan drug status by the European Commission in the European Union for the treatment of anaplastic thyroid cancer, ovarian cancer and neuroendocrine tumors. OXi4503 has been awarded orphan drug status by the European Commission in the European Union for the treatment of acute myelogenous leukemia.

Expedited Review and Approval

The FDA has various programs, including Fast Track, priority review, accelerated approval and breakthrough therapy, which are intended to expedite or simplify the process for reviewing drugs, and/or provide for approval on the basis of surrogate endpoints. Even if a drug qualifies for one or more of these programs, the FDA may subsequently decide the drug no longer meets the conditions for qualification or the FDA may not shorten the review or approval time period. Generally, drugs that may be eligible for these programs are those for serious or life-threatening conditions, those with the potential to address unmet medical needs, and those that offer meaningful benefits over existing treatments. Fast Track designation applies to the combination of the product and the specific indication for which it is being studied. Although Fast Track and priority review do not affect the standards for approval, the FDA will attempt to facilitate early and frequent meetings with a sponsor of a Fast Track designated drug and expedite review of the application for a drug designated for priority review. Drugs that receive an accelerated approval may be approved on the basis of adequate and well-controlled clinical trials establishing that the drug product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit or on the basis of an effect on a clinical endpoint other than survival or irreversible morbidity. As a condition of approval, the FDA may require that a sponsor of a drug receiving accelerated approval perform post-marketing clinical trials.

OXi4503 has been awarded Fast Track designation for the treatment of AML.

Foreign Regulation

In addition to regulations in the United States, we are subject to a variety of foreign regulations governing clinical trials and if any of our product candidates are approved we will be subject to additional regulations regarding commercial sales and distribution. Whether or not we obtain FDA approval to test a product candidate in the United States, we must obtain approval by the comparable regulatory authorities of foreign countries before we can commence testing any product candidate in those countries. Likewise, whether or not we obtain FDA approval to market a product, we must obtain approval by the comparable regulatory authorities of foreign countries before we can commence marketing of any product candidate in those countries. The approval process varies from country to country and the time may be longer or shorter than that required for FDA approval. The requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from country to country.

Under European Union regulatory systems, a company may submit marketing authorization applications, or MAAs, either under a centralized or decentralized procedure. The centralized procedure, which is compulsory for medicines produced by biotechnology or those medicines intended to treat AIDS, cancer, neurodegenerative disorders or diabetes and optional for those medicines which are highly innovative, provides for the grant of a single marketing authorization that is valid for all European Union member states. The decentralized procedure provides for mutual recognition of national approval decisions. Under this procedure, the holder of a national marketing authorization may submit an application to the remaining member states. Within 90 days of receiving the applications and assessments report, each member state must decide whether to recognize approval. If a member state does not recognize the marketing authorization, the disputed points are eventually referred to the European Commission, whose decision is binding on all member states.

As in the United States, the European Medicines Agency, or EMA, may grant orphan drug status for specific indications if the request is made before an MAA is submitted. The EMA considers an orphan medicinal product to be one that affects less than five of every 10,000 people in the European Union. A company whose application for orphan drug designation in the European Union is approved is eligible to receive, among other benefits, regulatory assistance in preparing the marketing application, protocol assistance and reduced application fees. Orphan drugs in the European Union receive up to ten years of market exclusivity for the approved indication.

Reimbursement

Sales of any of our product candidates, if approved, will depend, in part, on the extent to which the costs of the products will be covered by third-party payors, including government health programs such as Medicare and Medicaid, commercial health insurers and managed care organizations. These third-party payors are increasingly challenging the prices charged for health care products and services. The U.S. government, state legislatures and foreign governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement and requirements for substitution of generic products. Adoption or application of price controls and cost-containment measures could limit our revenue. If third-party payors do not consider our products to be cost-effective they may not pay for our products even if we receive approval, or their level of payment may not be sufficient to allow us to sell our products on a profitable basis.

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003, or the MMA, imposes requirements for the distribution and pricing of prescription drugs for Medicare beneficiaries. Under Part D (the Medicare prescription drug benefit), Medicare beneficiaries may enroll in prescription drug plans offered by private entities that provide coverage of outpatient prescription drugs not covered under Medicare Part B. Part D prescription drug plan sponsors are not required to pay for all covered Part D drugs. Each drug plan can develop its own drug formulary that identifies which drugs it will cover and at what tier or level. Federal regulations require Part D prescription drug formularies to include drugs within each therapeutic category and class of covered Part D drugs, although not necessarily all the drugs in each category or class.

In general, government payment for some of the costs of prescription drugs may increase demand for products for which we receive marketing approval. However, any negotiated prices for our products covered by a Part D prescription drug plan will likely be lower than the prices we 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 or other Medicare regulations may result in a similar reduction in payments from non-governmental payors.

The Patient Protection and Affordable Care Act and the Health Care and Education Affordability Reconciliation Act of 2010 (collectively, the Affordable Care Act or ACA,) mandated prescription drug coverage as one of ten essential health benefits that most health plans must offer, requiring coverage of at least one drug in every category and class. The ACA increased in the number of individuals covered by insurance and as a result commercial insurers and government programs have increased their emphasis on cost controls to reduce overall spending. A number of federal government leaders have expressed their intentions to repeal and replace the ACA. If full or partial repeal is enacted, many if not all of the provisions of the ACA may no longer apply to prescription drugs. As a result, we expect that there will continue to be uncertainty regarding drug product pricing, reimbursement and other factors impacting the revenue we may receive if our product candidates are ultimately approved, which could have a material adverse effect on our business, financial condition and results of operations.

In addition, in some foreign countries, the proposed pricing for a drug must be approved before it may be lawfully marketed. The requirements governing drug pricing vary widely from country to country. For example, the European Union provides options for its member states to restrict the range of medicinal products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. A member state may approve a specific price for the medicinal product or it may instead adopt a system of direct or indirect controls on 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 our products. Historically, products launched in the European Union do not follow price structures of the United States and tend to be significantly lower.

PATENTS AND PROPRIETARY RIGHTS

We actively seek to protect the proprietary technology that we consider important to our business, including chemical species, compositions and forms, their methods of use and processes for their manufacture, as well as modified forms of naturally-expressed receptors, in the United States and other jurisdictions internationally that we consider key pharmaceutical markets. We also rely upon trade secrets and contracts to protect our proprietary information.

As of March 15, 2019, we were the exclusive licensee, sole assignee or co-assignee of fifteen granted U.S. patents, one pending U.S. patent application, and granted patents and/or pending applications in several other major markets, including the European Union, Canada and Japan. Our policy is to file U.S. and foreign patent applications to protect technology, inventions and improvements to inventions that are commercially important to the development of our business. There can be no assurance that any of these patent applications will result in the grant of a patent either in the United States or elsewhere, or that any patents granted will be valid and enforceable, or will provide a competitive advantage or will afford protection against competitors with similar technologies. We also intend to rely upon trade secret rights to protect other technologies that may be used to discover and validate targets and that may be used to identify and develop novel drugs. We seek protection, in part, through confidentiality and proprietary information agreements.

We consider the following U.S. patents and applications owned by or exclusively licensed to us to be particularly important to the protection of our most advanced product candidates.

Product Candidate	Patent Scope	Patent Expiration
CA4P	Lyophilized or crystalline combretastatin A4-phosphate tromethamine*	September 2021
	Use of VDAs to Enhance Immunomodulating Therapies Against Tumors**	August 2036
OXi4503	Composition of matter for OXi4503 (combretastatin A1-disodium-phosphate (OXi4503) pro-drug)***	October 2021
	Method of treating myeloid neoplasm by administering OXi4503	November 2028

* In-licensed from Bristol-Myers Squibb
** Patent filed, awaiting grant
*** In-licensed from Arizona State University

In addition to these patents, for some of our product candidates, we have patents and/or applications that cover a particular form or composition, use for a particular indication, use as part of combination therapy or method of preparation or use, as well as other pending patent applications. These issued patents, including any patents that issue from pending applications, could provide additional or a longer period of protection. We also have patent applications pending that seek equivalent or substantially comparable protection for our product candidates in jurisdictions internationally that we consider key pharmaceutical markets.

The patent expiration dates referenced above do not reflect any potential patent term extension that we may receive under the federal Drug Price Competition and Patent Term Restoration Act of 1984, known as the Hatch-Waxman Act. The Hatch-Waxman Act generally permits a patent extension term of up to five years as compensation for patent term lost during the FDA regulatory review process. Patent extension cannot extend the remaining term of a patent beyond a total of 14 years. The patent term restoration period is generally one-half of the time between the effective date of an investigational new drug application, or IND, and the submission date of a new drug application, or NDA, plus the time between the submission date and approval date of an NDA. Only one patent applicable to an approved drug is eligible for the extension, and the extension must be applied for prior to expiration of the patent. The United States Patent and Trademark Office, in consultation with the FDA, reviews and approves applications for patent term extension.

As previously noted, the FDA and European Union have granted CA4P and OXi4503 orphan drug status for certain indications. We are also pursuing, and may continue to in the future to pursue, orphan drug status for other product candidates and indications. Our ability to obtain and maintain the exclusivity for our products and product candidates by virtue of their orphan drug status is an important part of our intellectual property strategy.

COMPETITION

The industry in which we are engaged is characterized by rapidly evolving technology and intense competition. Our competitors include, among others, major pharmaceutical, biopharmaceutical and biotechnology companies, nearly all of which have financial, technical and marketing resources significantly greater than ours. In addition, many of the small companies in our industry have also formed collaborative relationships with large, established companies to support research, development and commercialization of products that may be competitive with ours. Academic institutions, governmental agencies and other public and private research organizations are also conducting research activities and patenting new technologies in our line of business and any of these entities may commercialize products that may be competitive with ours.

We expect that, if any of our products gain regulatory approval for sale, they will compete primarily on the basis of product efficacy, safety, patient convenience, reliability, price and patent protection. Our competitive position will also depend on our ability to attract and retain qualified scientific and other personnel, develop effective proprietary products and implement joint ventures or other alliances with large pharmaceutical companies in order to jointly market and manufacture our products.

EMPLOYEES

We had only two full-time employees as of December 31, 2018. We rely on external consultants or outsource nearly all of our research, development, preclinical testing and clinical trial activity, although we maintain managerial and quality control over our clinical trials. We also rely on external consultants for various administrative tasks that are required for a public company. We expect to continue to rely on external service providers and to maintain a small number of executives and other employees.

ITEM 1A. RISK FACTORS

Statements in this Annual Report under the captions "Business" and "Management's Discussion and Analysis of Financial Condition and Results of Operations," as well as oral statements that may be made by us or by officers, directors or employees acting on our behalf, that are not historical fact constitute "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements involve known and unknown risks, uncertainties and other factors that could cause our actual results to be materially different from the historical results or from any results expressed or implied by such forward-looking statements. Such factors include, but are not limited to, the risk factors set forth below.

We do not intend to update any forward-looking statements to reflect events or circumstances after the date of such statements or to reflect the occurrence of anticipated or unanticipated events.

If we are unable to obtain additional funding, we may be forced to cease operations.

We have experienced net losses every year since inception and, as of December 31, 2018, had an accumulated deficit of approximately $295 million, including a net loss of approximately $2.7 million in 2018. We have no source of revenue and do not expect to receive any product revenue in the near future. If we remain in business, we expect to incur additional operating losses over the next several years, principally as a result of our plans to continue clinical trials for our investigational drugs. As of December 31,

2018, we had approximately $0.6 million in cash and current liabilities of approximately $1.2 million. Based on our planned operations, we expect our cash to only support our operations for a short period of time. Therefore, we will need to secure near-term funding or we would be forced to curtail or terminate operations. Because we do not currently have a guaranteed source of capital that will sustain operations for at least the next twelve months, Management has determined that there is substantial doubt about our ability to continue as a going concern.

The principal source of our working capital to date has been the proceeds from the sale of equity. If we are unable to access additional funds in the near term, whether through the sale of additional equity or another means, we may not be able to continue in business. We also may not be able to continue the development of our investigational drugs. Any additional equity financing, if available to us, may not be available on favorable terms and would most likely be dilutive to stockholders. Any debt financing, if available, may involve restrictive covenants and also be dilutive to current stockholders. If we obtain funds through collaborative or licensing arrangements, we may be required to relinquish rights to some of our technologies or product candidates on terms that are not favorable to us. Our ability to access capital when needed is not assured.

In their audit report with regard to our financial statements as of December 31, 2018, our independent registered public accountants expressed an opinion that substantial doubt exists as to whether we can continue as a going concern. Because we have limited cash resources, we believe that it will be necessary for us to either raise additional capital in the near term or to enter into a license or other agreement with a larger pharmaceutical company. If we do not succeed in doing so, we may be required to suspend or cease our business, which would likely materially harm the value of our common stock.

We will require additional capital funding, the receipt of which may impair the value of our common stock.

Our future capital requirements depend on many factors, including our research, development, sales and marketing activities. We will need to raise additional capital through public or private equity or debt offerings or through arrangements with strategic partners or other sources in order to continue to develop our product candidates. There can be no assurance that additional capital will be available when needed or on terms satisfactory to us, if at all. To the extent we raise additional capital by issuing equity securities, our shareholders may experience substantial dilution and the new equity securities may have greater rights, preferences or privileges than our existing common stock.

Due in part to our limited financial resources, we may fail to select or capitalize on the most scientifically, clinically or commercially promising or profitable indications or therapeutic areas for our product candidates, and we may be unable to pursue and complete the clinical trials that we would like to pursue and complete.

We have limited financial and technical resources to determine the indications on which we should focus the development efforts for our product candidates. Due to our limited available financial resources, we have curtailed clinical development programs and activities that might otherwise have led to more rapid progress of our product candidates through the regulatory and development processes. We currently have insufficient financial resources to complete any additional drug development work.

If we are able to raise funds and continue developing investigational drugs for cancer, we may make incorrect determinations with regard to the indications and clinical trials on which to focus the available resources that we do have. Furthermore, we cannot assure you that we will be able to retain adequate staffing levels to run our operations and/or to accomplish all of the objectives that we otherwise would seek to accomplish. The decisions to allocate our research, management and financial resources toward particular indications or therapeutic areas for our product candidates may not lead to the development of viable commercial products and may divert resources from better opportunities. Similarly, our decisions to delay or terminate drug development programs may also cause us to miss valuable opportunities. In addition, from time to time, we may in-license or otherwise acquire product candidates to supplement our internal development activities. Those activities may use resources that otherwise would have been devoted to our internal programs, and with research and development programs there is no way to assure that the outcome of any trials or other activities will be positive, whether the program was internally generated or in-licensed.

If we are unable to obtain required regulatory approvals, we will be unable to market and sell our product candidates.

Our product candidates are subject to extensive governmental regulations relating to development, clinical trials, manufacturing, oversight of clinical investigators, recordkeeping and commercialization. Rigorous preclinical testing and clinical trials and an extensive regulatory review and approval process are required to be successfully completed in the United States, in the European Union and in many other foreign jurisdictions before a new drug can be sold. Satisfaction of these and other regulatory requirements is costly, time consuming, uncertain, and subject to unanticipated delays. The time required to obtain approval by the FDA or the European Medicines Agency, or EMA, is unpredictable and often takes many years following the commencement of clinical trials.

In connection with the clinical development of our product candidates, we face risks that:

- our product candidates may not prove to be safe and efficacious;
- patients may die or suffer serious adverse effects for reasons that may or may not be related to the product candidate being tested;

- we fail to maintain adequate records of observations and data from our clinical trials, to establish and maintain sufficient procedures to oversee, collect data from, and manage clinical trials, or to monitor clinical trial sites and investigators to the satisfaction of the FDA, EMA or other regulatory agencies;
- we may not have sufficient financial resources to complete the clinical trials that would be necessary to obtain regulatory approvals;
- the results of later-phase clinical trials may not confirm the results of earlier clinical trials; and
- the results from clinical trials may not meet the level of statistical significance or clinical benefit-to-risk ratio required by the FDA, EMA or other regulatory agencies for marketing approval.

Only a small percentage of product candidates for which clinical trials are initiated are the subject of NDAs and even fewer receive approval for commercialization. Furthermore, even if we do receive regulatory approval to market a product candidate, any such approval may be subject to limitations such as those on the indicated uses for which we may market the product.

If we or the third parties on which we rely for the conduct of our clinical trials and results do not perform our clinical trial activities in accordance with good clinical practices and related regulatory requirements, we may not be able to obtain regulatory approval for or commercialize our product candidates.

We currently use independent clinical investigators in all of our clinical trials and, in many cases, also utilize contract research organizations, or CROs, and other third-party service providers to conduct and/or oversee the clinical trials of our product candidates and expect to continue to do so for the foreseeable future. We rely heavily on these parties for successful execution of our clinical trials. Nonetheless, we are responsible for confirming that each of our clinical trials is conducted in accordance with the FDA's requirements and our general investigational plan and protocol. Currently, we have clinical trial activities involving CA4P and OXi4503 being conducted by clinical investigators who are independent of us, but with whom we have agreements for them to provide the results of their clinical trials to us. In order for us to rely on data from these ongoing clinical trials in support of a New Drug Application, or NDA, for approval of any of our product candidates by the FDA or similar types of marketing applications that are required by other regulatory authorities, the independent investigators are required to comply with applicable good clinical practice requirements.

The FDA and corresponding foreign regulatory authorities require us and our clinical investigators to comply with regulations and standards, commonly referred to as good clinical practices, or GCPs, for conducting and recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the trial participants are adequately protected. Our reliance on third parties that we do not control does not relieve us of these responsibilities and requirements. Third parties may not complete activities on schedule or may not conduct our clinical trials in accordance with regulatory requirements or the respective trial plans and protocols. The failure of these third parties to carry out their obligations could delay or prevent the development, approval and commercialization of our product candidates or result in enforcement action against us.

We have taken and continue to take steps to strengthen our procedures and practices, but we cannot assure you that the FDA will be satisfied with our procedures or that the FDA will not issue warning letters or take other enforcement action against us in the future. The steps we take to strengthen our procedures and conduct future clinical trials necessary for approval will be time-consuming and expensive.

We may encounter difficulties in expanding our operations successfully if and when we evolve from a company that is primarily involved in clinical development to a company that is also involved in commercialization.

As we advance our product candidates through later stages of clinical trials, we will need to expand our development, regulatory, manufacturing, marketing and sales capabilities or contract with third parties to provide these capabilities for us. As our operations expand, we expect that we will need to manage additional relationships with such third parties, as well as additional collaborators, distributors, marketers and suppliers.

Maintaining third party relationships for these purposes will impose significant added responsibilities on members of our management and other personnel. We must be able to manage our development efforts effectively, manage our participation in the clinical trials in which our product candidates are involved effectively, and improve our managerial, development, operational and finance systems, all of which may impose a strain on our administrative and operational infrastructure.

If, following any approval of our product candidates, we enter into arrangements with third parties to perform sales, marketing or distribution services, any product revenues that we receive, or the profitability of these product revenues to us, are likely to be lower than if we were to market and sell any products that we develop ourselves. In addition, we may not be successful in entering into arrangements with third parties to sell and market our products or in doing so on terms that are favorable to us. We likely will have little control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our products effectively. If we do not establish sales and marketing capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing our products.

If we were to submit an NDA for our drug candidates in the United States or a marketing application in the EU, we would need to undertake commercial scale manufacturing activities at significant expense to us in order to proceed with the application for approval for commercialization. We or our external vendors may encounter technical difficulties that preclude us from successfully manufacturing the required registration and validation batches of active pharmaceutical ingredient, or API, and/or drug product and we may be unable to recover any financial losses associated with the manufacturing activities. Further, our research or product development efforts may not be successfully completed, any compounds currently under development by us may not be successfully developed into drugs, any potential products may not receive regulatory approval on a timely basis, if at all, and competitors may develop and bring to market products or technologies that render our potential products obsolete. If any of these problems occur, our business would be materially and adversely affected.

We have no manufacturing capacity and have relied on, and expect to continue to rely on, third-party manufacturers to produce our product candidates.

We do not own or operate manufacturing facilities for the production of clinical or commercial quantities of our product candidates or any of the compounds that we are testing in our preclinical programs, and we lack the resources and the capabilities to do so. As a result, we currently rely, and we expect to rely for the foreseeable future, on third-party manufacturers to supply our product candidates. Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured our product candidates or products ourselves, including:

- reliance on third-parties for manufacturing process development, regulatory compliance and quality assurance;
- limitations on supply availability resulting from capacity and scheduling constraints of third-parties;
- the possible breach of manufacturing agreements by third-parties because of factors beyond our control; and
- the possible termination or non-renewal of the manufacturing agreements by the third-party, at a time that is costly or inconvenient to us.

If we do not maintain our developed important manufacturing relationships, we may fail to find replacement manufacturers or develop our own manufacturing capabilities, which could delay or impair our ability to obtain regulatory approval for our products and substantially increase our costs or deplete profit margins, if any. If we do find replacement manufacturers, we may not be able to enter into agreements with them on terms and conditions favorable to us, and there could be a substantial delay before new facilities could be qualified and registered with the FDA, EMA and other foreign regulatory authorities.

The FDA, EMA and other foreign regulatory authorities require manufacturers to register manufacturing facilities. The FDA and corresponding foreign regulators also inspect these facilities to confirm compliance with current good manufacturing practices, or cGMPs. Contract manufacturers may face manufacturing or quality control problems causing drug substance production and shipment delays or a situation where the contractor may not be able to maintain compliance with the applicable cGMP requirements. Any failure to comply with cGMP requirements or other FDA, EMA and comparable foreign regulatory requirements could adversely affect our clinical research activities and our ability to develop our product candidates and market our products after approval.

Our current and anticipated future dependence upon others for the manufacture of our product candidates may adversely affect our ability to develop our product candidates, our ability to commercialize any products that receive regulatory approval and our potential future profit margins on these products.

Our product candidates have not completed clinical trials, and may never demonstrate sufficient safety and efficacy in order to do so.

Our product candidates are in the clinical stage of development. In order to achieve profitable operations, we alone or in collaboration with others, must successfully develop, manufacture, introduce and market our products. The time frame necessary to achieve market success for any individual product is long and uncertain. The products currently under development by us may require significant additional research and development and additional preclinical and clinical testing prior to application for commercial use. A number of companies in the biotechnology and pharmaceutical industries have suffered significant setbacks in clinical trials, even after showing promising results in early or later-stage studies or clinical trials. Although we have obtained some favorable results to date in preclinical studies and clinical trials of certain of our potential products, such results may not be indicative of results that will ultimately be obtained in or throughout such clinical trials, and clinical trials may not show any of our products to be safe or capable of producing a desired result. Additionally, we may encounter problems in our clinical trials that may cause us to delay, suspend or terminate those clinical trials.

Adverse events observed to date and associated with CA4P and OXi4503 have generally been found to be manageable for drugs treating the indications for which we are developing our product candidates. However, we will be required to continue to test and evaluate the safety of our product candidates in additional clinical trials, and to demonstrate their safety to the satisfaction of appropriate regulatory agencies, as a condition to receipt of any regulatory approvals. In clinical trials to date, transient hypertension believed to be associated with CA4P and OXi4503 has been effectively managed through pre-treatment with anti-hypertensive medication. We cannot assure you, however, that we will be able to make the necessary demonstrations of safety to allow us to receive regulatory approval for our product candidates in any indication.

We only have a limited number of employees to manage and operate our business.

As of December 31, 2018, we had two full-time employees. Our limited financial resources require us to manage and operate our business in a highly efficient manner. We cannot assure you that we will be able to retain adequate staffing levels to run our operations and/or to accomplish all of the objectives that we otherwise would seek to accomplish.

We have a history of losses, and we anticipate that we will continue to incur losses in the future; our auditors have included in their audit report an explanatory paragraph as to substantial doubt as to our ability to continue as a going concern.

We have experienced net losses every year since our inception and, as of December 31, 2018, had an accumulated deficit of approximately $295 million. Our auditors have included in their audit report a "going concern" explanatory paragraph as to substantial doubt as to our ability to continue as a going concern that assumes the realization of our assets and the satisfaction of our liabilities and commitments in the normal course of business. We anticipate continuing to incur substantial additional losses over at least the next several years due to, among other factors, our clinical trials and development activities with respect to our drug candidates, technologies, and anticipated research and development activities and the general and administrative expenses associated with those activities. We have not yet commercialized any product candidates. Our ability to attain profitability will depend upon our ability to develop and commercialize products that are effective and commercially viable, to obtain regulatory approval for the manufacture and sale of our products and to license or otherwise market our products successfully. We may never achieve profitability.

We depend on our executive officers and principal consultants and the loss of their services could materially harm our business.

We believe that our success depends, and will likely continue to depend, upon our ability to retain the services of our current executive officers, particularly our Chief Executive Officer and Chief Financial Officer, our principal consultants and others. Our executive officers have been working at 50% salaries since early October 2017, which increases the risk that we may not be able to retain their services. The loss of the services of any of these individuals could have a material adverse effect on our business. In addition to these key service providers, we have established relationships with universities, hospitals and research institutions, which have historically provided, and continue to provide, us with access to research laboratories, clinical trials, facilities and patients. Additionally, we believe that we may, at any time and from time to time, materially depend on the services of consultants and other unaffiliated third parties. We cannot assure you that consultants and other unaffiliated third parties will provide the level of service to us that we require in order to achieve our business objectives.

Our industry is highly competitive, and our product candidates may become obsolete.

We are engaged in a rapidly evolving field. Competition from other pharmaceutical companies, biotechnology companies and research and academic institutions is intense and likely to increase. Many of those companies and institutions have substantially greater financial, technical and human resources than we do. Many of those companies and institutions also have substantially greater experience in developing products, conducting clinical trials, obtaining regulatory approval and in manufacturing and marketing pharmaceutical products. Our competitors may succeed in obtaining regulatory approval for their products more rapidly than we do. Competitors have developed or are in the process of developing technologies that are, or in the future may be, the basis for competitive products. Some of these competitive products may have an entirely different approach or means of accomplishing the desired therapeutic effect than products being developed by us. Our competitors may succeed in developing products that are more effective and/or cost competitive than those we are developing, or that would render our product candidates less competitive or even obsolete. In addition, one or more of our competitors may achieve product commercialization or patent protection earlier than we do, which could materially adversely affect us.

We depend extensively on the patents and proprietary technology we license from others, and we must maintain these licenses in order to preserve our business.

We have licensed in rights to CA4P, OXi4503 and other programs from third parties. If our license agreements terminate or expire, we may lose the licensed rights to our product candidates, including CA4P and OXi4503, and we may not be able to continue to develop them or, if they are approved, we may not be able to market or commercialize them.

We depend on license agreements with third-parties for certain intellectual property rights relating to our product candidates, including patent rights. Currently, we have licensed in certain patent rights from Arizona State University, or ASU, and the Bristol-Myers Squibb Company for CA4P and OXi4503 and from Baylor University for other programs. In general, our license agreements require us to make payments and satisfy performance obligations in order to keep these agreements in effect and retain our rights under them. These payment obligations can include upfront fees, maintenance fees, milestones, royalties, patent prosecution expenses, and other fees. These performance obligations typically include diligence obligations. If we fail to pay, be diligent or otherwise perform as required under our license agreements, we could lose the rights under the patents and other intellectual property rights covered by the agreements. While we are not currently aware of any dispute with any licensors under our material agreements with them, if disputes arise under any of our in-licenses, including our in-licenses from ASU, the Bristol-Myers Squibb Company and Baylor University, we could lose our rights under these agreements. Any such dispute may not be resolvable on favorable terms, or at all. Whether or not any disputes of this kind are favorably resolved, our management's time and attention and our other resources could be consumed by the need to attend to and seek to resolve these disputes and our business could be harmed by the emergence of such a dispute.

If we lose our rights under these agreements, we may not be able to conduct any further activities with the product candidate or program that the license covered. If this were to happen, we might not be able to develop our product candidates further, or following regulatory approval, if any, we might be prohibited from marketing or commercializing them. In particular, patents previously licensed to us, such as the patents we previously licensed from Angiogene, might after termination be used to stop us from conducting activities in the patents' respective fields.

We depend on patents and proprietary technology in the course of our business, and we must protect those assets in order to preserve our business.

Although we expect to seek patent protection for any compounds we discover and/or for any specific use we discover for new or previously known compounds, any or all of them may not be subject to effective patent protection. Further, the development of regimens for the administration of pharmaceuticals, which generally involve specifications for the frequency, timing and amount of dosages, has been, and we believe, may continue to be, important to our effort, although those processes, as such, may not be patentable. In addition, the issued patents may be declared invalid or our competitors may find ways to avoid the claims in the patents. Further, our lack of access to adequate capital may cause us to curtail payment of fees necessary to maintain patents that we otherwise would seek to maintain, and we may make incorrect decisions regarding which patents to keep and which to abandon.

Our success will depend, in part, on our ability to obtain and maintain patents, protect our trade secrets and operate without infringing on the proprietary rights of others. We are the exclusive licensee, sole assignee or co-assignee on a number of granted United States patents, pending United States patent applications, and granted patents and/or pending applications in several other major markets, including the European Union, Canada and Japan. The patent position of pharmaceutical and biotechnology firms like us is generally highly uncertain and involves complex legal and factual questions, resulting in both an apparent inconsistency regarding the breadth of claims allowed in United States patents and general uncertainty as to their legal interpretation and enforceability. Accordingly, patent applications assigned or exclusively licensed to us may not result in patents being issued, any issued patents assigned or exclusively licensed to us may not provide us with competitive protection or may be challenged by others, and the current or future granted patents of others may have an adverse effect on our ability to do business and achieve profitability. Moreover, because some of the basic research relating to one or more of our patent applications and/or patents were performed at various universities and/or funded by grants, one or more of these universities, employees of such universities and/or grantors could assert that they have certain rights in such research and any resulting products. Further, others may independently develop similar products, may duplicate our products, or may design around our patent rights. In addition, as a result of the assertion of rights by a third-party or otherwise, we may be required to obtain licenses to patents or other proprietary rights of others in or outside of the United States. Any licenses required under any such patents or proprietary rights may not be made available on terms acceptable to us, if at all. If we do not obtain such licenses, we could encounter delays in product market introductions while our attempts to design around such patents or could find that the development, manufacture or sale of products requiring such licenses is foreclosed. In addition, we could incur substantial costs in defending ourselves in suits brought against us or in connection with patents to which we hold licenses or in bringing suit to protect our own patents against infringement.

We require employees and the institutions that perform our preclinical and clinical trials to enter into confidentiality agreements with us. Those agreements provide that all confidential information developed or made known to a party to any such agreement during the course of the relationship with us be kept confidential and not be disclosed to third-parties, except in specific circumstances. Any such agreement may not provide meaningful protection for our trade secrets or other confidential information in the event of unauthorized use or disclosure of such information.

The use of our products may result in product liability exposure, and it is uncertain whether our insurance coverage will be sufficient to cover all claims.

The use of our product candidates in clinical trials may expose us to liability claims in the event such product candidates cause death, injury or disease, or result in adverse effects. We may be exposed to liability claims even if our product did not cause death, injury or diseases, but is merely presumed or alleged to have caused any of these. If our product candidates are ever commercially approved, the commercial use of these products may also expose us to similar liability claims. Any of these claims could be made by health care institutions, contract laboratories, patients or others using such products. Although we have obtained liability insurance coverage for our ongoing clinical trials, this coverage may not be in amounts sufficient to protect us from any product liability claims or product recalls which could have a material adverse effect on our financial condition and prospects. Further, adverse product and similar liability claims could negatively impact our ability to obtain or maintain regulatory approvals for our technology and product candidates under development.

If clinical trials or regulatory approval processes for our product candidates are prolonged, delayed or suspended, we may be unable to out-license or commercialize our product candidates on a timely basis, which would require us to incur additional costs and delay or prevent our receipt of any proceeds from potential license agreements or product sales.

We cannot predict whether we will encounter problems with any of our completed, ongoing or planned clinical trials that will cause us or any regulatory authority to delay or suspend those clinical trials or delay or invalidate the analysis of data derived from them. A number of events, including any of the following, could delay the completion of our other ongoing and planned clinical trials and negatively impact our ability to obtain regulatory approval for, and to market and sell, a particular product candidate:

- conditions imposed on us by the FDA, EMA or another foreign regulatory authority regarding the scope or design of our clinical trials;
- delays in obtaining, or our inability to obtain, required approvals from institutional review boards or other reviewing entities at clinical sites selected for participation in our clinical trials;
- insufficient supply of our product candidates or other materials necessary to conduct and complete our clinical trials;
- slow enrollment and retention rate of subjects in clinical trials;
- any compliance audits and pre-approval inspections by the FDA, EMA or other regulatory authorities;
- negative or inconclusive results from clinical trials, or results that are inconsistent with earlier results;
- serious and unexpected drug-related side effects; and
- failure of our third-party contractors to comply with regulatory requirements or otherwise meet their contractual obligations to us.

Commercialization or licensure of our product candidates may be delayed or prevented by the imposition of additional conditions on our clinical trials by the FDA, EMA or another foreign regulatory authority or the requirement of additional supportive clinical trials by the FDA, EMA or another foreign regulatory authority. In addition, clinical trials require sufficient patient enrollment, which is a function of many factors, including the size of the patient population, the nature of the trial protocol, the proximity of patients to clinical sites, the availability of effective treatments for the relevant disease, the conduct of other clinical trials that compete for the same patients as our clinical trials, and the eligibility criteria for our clinical trials. Our failure to enroll patients in our clinical trials could delay the completion of the clinical trial beyond our expectations, or it could prevent us from being able to complete the clinical trial. In addition, the FDA and EMA could require us to conduct clinical trials with a larger number of subjects than we have projected for any of our product candidates. We may not be able to enroll a sufficient number of patients in a timely or cost-effective manner. Furthermore, enrolled patients may drop out of our clinical trials, which could impair the validity or statistical significance of the clinical trials.

We do not know whether our clinical trials will begin as planned, will need to be restructured, or will be completed on schedule, if at all. Delays in our clinical trials will result in increased development costs for our product candidates, and our financial resources may be insufficient to fund any incremental costs. In addition, if our clinical trials are delayed, our competitors may be able to bring products to market before we do and the commercial viability of our product candidates could be limited.

We have been granted orphan drug status for certain of our product candidates and may seek orphan drug status for additional indications for those product candidates or for additional product candidates. We may be unsuccessful in maintaining orphan drug exclusivity for our product candidates and may be unsuccessful in our efforts to seek orphan drug status and orphan drug exclusivity.

Regulatory authorities in some jurisdictions, including the United States and the European Union, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a disease with a patient population of fewer than 200,000 individuals in the United States. Our lead product candidate, OXi4503, has been awarded orphan drug status by the FDA and the European Commission for the treatment of acute myelogenous leukemia. Our other product candidate, CA4P, has been

awarded orphan drug status by the FDA for the treatment of anaplastic, medullary, Stage IV papillary and Stage IV follicular thyroid cancers, ovarian cancer, neuroendocrine tumors and glioma. CA4P has also been awarded orphan drug status by the European Commission in the European Union for the treatment of anaplastic thyroid cancer, ovarian cancer and neuroendocrine tumors.

Generally, if a product with an orphan drug designation subsequently receives the first marketing approval for the indication for which it has such designation, the product is entitled to a period of marketing exclusivity, which precludes the EMA or the FDA from approving another marketing application for the same drug for the same indication during the period of exclusivity. The applicable period is seven years in the United States and ten years in the European Union. The European exclusivity period can be reduced to six years if a drug no longer meets the criteria for orphan drug designation or if the drug is sufficiently profitable so that market exclusivity is no longer justified. Orphan drug exclusivity may be lost if the FDA or the EMA determines that the request for designation was materially defective, if the manufacturer is unable to assure sufficient quantity of the drug to meet the needs of patients with the rare disease or condition.

Even if we obtain orphan drug exclusivity for a product candidate or additional product candidates, that exclusivity may not effectively protect the product candidate from competition because different drugs can be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve a different drug for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care.

Our product candidates will remain subject to ongoing regulatory review even if they receive marketing approval, and if we fail to comply with continuing regulations, we could lose these approvals and the sale of any approved commercial products could be suspended.

Even if we receive regulatory approval to market a particular product candidate, the manufacturing, labeling, packaging, adverse event reporting, storage, advertising, promotion, and record keeping related to the product will remain subject to extensive regulatory requirements. If we fail to comply with the regulatory requirements of the FDA, EMA and other applicable domestic and foreign regulatory authorities or previously unknown problems with any approved product, manufacturer, or manufacturing process are discovered, we could be subject to administrative or judicially imposed sanctions, including:

- restrictions on the products, manufacturers, or manufacturing processes;
- warning letters;
- civil or criminal penalties;
- fines;
- injunctions;
- product seizures or detentions;
- pressure to initiate voluntary product recalls;
- suspension or withdrawal of regulatory approvals; and
- refusal to approve pending applications for marketing approval of new products or supplements to approved applications.

If physicians and patients do not accept our future products or if the market for indications for which any product candidate is approved is smaller than expected, we may be unable to generate significant revenue, if any.

Even if any of our product candidates obtain regulatory approval, they may not gain market acceptance among physicians, patients, and third-party payers. Physicians may decide not to prescribe our drugs for a variety of reasons including:

- timing of market introduction of competitive products;
- demonstration of clinical safety and efficacy compared to other products;
- cost-effectiveness;
- limited or no coverage by third-party payers;
- convenience and ease of administration;
- prevalence and severity of adverse side effects;
- restrictions in the label of the drug;
- other potential advantages of alternative treatment methods; and
- ineffective marketing and distribution support of our products.

If any of our product candidates is approved, but fails to achieve market acceptance, we may not be able to generate significant revenue and our business would suffer.

The uncertainty associated with pharmaceutical reimbursement and related matters may adversely affect our business.

Market acceptance and sales of any one or more of our product candidates that we develop will depend on reimbursement policies and may be affected by future healthcare reform measures in the United States and in foreign jurisdictions. Government authorities and third-party payers, such as private health insurers and health maintenance organizations, decide which drugs they will cover and establish payment levels. We cannot be certain that reimbursement will be available for any product candidates that we develop. Also, we cannot be certain that reimbursement policies will not reduce the demand for, or the price paid for, our products. If reimbursement is not available or is available on a limited basis, we may not be able to successfully commercialize any product candidates that we develop.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, also called the Medicare Modernization Act, or MMA, changed the way Medicare covers and pays for pharmaceutical products. The legislation established Medicare Part D, which expanded Medicare coverage for outpatient prescription drug purchases by the elderly but provided authority for limiting the number of drugs that will be covered in any therapeutic class. The MMA also introduced a new reimbursement methodology based on average sales prices for physician-administered drugs.

The United States and several foreign jurisdictions are considering, or have already enacted, a number of legislative and regulatory proposals to change the healthcare system in ways that could affect our ability to sell our products profitably. Among policy makers and payers in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access to healthcare. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives. We expect to experience pricing pressures in connection with the sale of any products that we develop due to the trend toward managed healthcare, the increasing influence of health maintenance organizations and additional legislative proposals.

In March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act, or collectively, ACA, became law in the U.S. The goal of ACA is to reduce the cost of health care and substantially change the way health care is financed by both government and private insurers. While we cannot predict what impact on federal reimbursement policies this legislation will have in general or on our business specifically, the ACA may result in downward pressure on pharmaceutical reimbursement, which could negatively affect market acceptance of, and the price we may charge for, any products we develop that receive regulatory approval.

More recently, the current U.S. presidential administration has made statements suggesting plans to seek repeal of all or portions of the ACA. There is uncertainty regarding the impact that the President's administration may have on matters currently governed by the ACA, if any, and any regulatory or legislative changes will likely take time to unfold. These changes could have an impact on coverage and reimbursement for healthcare items and services covered by plans that were authorized by the ACA. However, we cannot predict the ultimate content, timing or effect of any healthcare reform legislation or the impact of potential legislation on us. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain profitability, or commercialize our products.

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

Our operations and the financial results of our operations could be adversely affected by general conditions in the global economy and in the global financial markets. Global financial concerns have caused, and may continue to cause, extreme volatility and disruptions in the capital and credit markets. A severe or prolonged economic downturn could result in a variety of risks to our business, including our ability to raise additional capital when needed on acceptable terms, if at all. We cannot currently anticipate all of the ways in which the current economic climate and financial market conditions could adversely impact our business.

Our business and operations could suffer in the event of system failures.

Despite the implementation of security measures, our internal computer systems and those of our third-party CROs and other contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. Furthermore, we have little or no control over the security measures and computer systems of our third-party CROs and other contractors and consultants. While we have not experienced any material system failure, accident, or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our programs. For example, the loss of clinical trial data for our product candidates could result in delays in our marketing approval efforts and significantly increase our costs to recover or reproduce the data. To the extent that any disruption or

security breach results in a loss of or damage to our data or applications or other data or applications relating to our technology or product candidates, or inappropriate disclosure of confidential or proprietary information, we could incur liabilities and the further development of our product candidates could be delayed.

Our employees, principal investigators, CROs and consultants may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements and insider trading.

We are exposed to the risk that our employees, principal investigators, CROs and consultants may engage in fraudulent conduct or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or disclosure of unauthorized activities to us that violate the regulations of the FDA and other regulatory authorities, including those laws requiring the reporting of true, complete and accurate information to such authorities; healthcare fraud and abuse laws and regulations in the United States and abroad; or laws that require the reporting of financial information or data accurately. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. Activities subject to these laws also involve the improper use of information obtained in the course of clinical trials or creating fraudulent data in our preclinical studies or clinical trials, which could result in regulatory sanctions and cause serious harm to our reputation.

We have a code of conduct applicable to all of our employees, but it is not always possible to identify and deter misconduct by employees and other third parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. Additionally, we are subject to the risk that a person could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of civil, criminal and administrative penalties, damages, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

We, or the third parties upon whom we depend, may be adversely affected by earthquakes or other natural disasters and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.

Earthquakes or other natural disasters could severely disrupt our operations and have a material adverse effect on our business, results of operations, financial condition and prospects. If a natural disaster, power outage or other event occurred that prevented us from using all or a significant portion of our headquarters, that damaged critical infrastructure, such as the manufacturing facilities of our third-party contract manufacturers, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time. The disaster recovery and business continuity plans we have in place may prove inadequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which could have a material adverse effect on our business.

The price of our common stock is volatile, and is likely to continue to fluctuate due to reasons beyond our control; a limited public trading market may cause volatility in the price of our common stock.

The market price of our common stock has been, and likely will continue to be, highly volatile. Factors, including our financial results or our competitors' financial results, clinical trial and research development announcements and government regulatory action affecting our potential products in both the United States and foreign countries, have had, and may continue to have, a significant effect on our results of operations and on the market price of our common stock. We cannot assure you that an investment in our common stock will not fluctuate significantly. One or more of these factors could significantly harm our business and cause a decline in the price of our common stock in the public market. Substantially all of the shares of our common stock issuable upon exercise of outstanding options and warrants have been registered or are likely to be registered for resale or are available for sale pursuant to Rule 144 under the Securities Act, and may be sold from time to time. As of December 31, 2018, we had approximately 31,256,000 shares of common stock underlying currently outstanding warrants and options. Sales of any of these shares on the market, as well as future sales of our common stock by existing stockholders, or the perception that sales may occur at any time, could adversely affect the market price of our common stock.

Our common stock is currently quoted on the OTCQB Market. The quotation of our common stock on the OTCQB Market does not assure that a meaningful, consistent and liquid trading market currently exists, and in recent years such market has experienced extreme price and volume fluctuations that have particularly affected the market prices of many smaller companies like us. Our common stock is subject to this volatility. Sales of substantial amounts of common stock, or the perception that such sales might occur, could adversely affect prevailing market prices of our common stock and our stock price may decline substantially in a short time and our stockholders could suffer losses or be unable to liquidate their holdings.

Our Common Stock is currently subject to the "Penny Stock" Rules of the SEC and the trading market in our securities is limited, which makes transactions in our stock cumbersome and may reduce the value of an investment in our stock.

As of December 31, 2018, we had net tangible assets of less than $2,000,000 and our common stock had a market price per share of less than $5.00. As a result, transactions in our common stock are subject to the SEC's "penny stock" rules. The designation of our common stock as a "penny stock" likely limits the liquidity of our common stock. Prices for penny stocks are often not available to buyers and sellers and the market may be very limited. Penny stocks are among the riskiest equity investments. Broker-dealers who sell penny stocks must provide purchasers of these stocks with a standardized risk-disclosure document prepared by the SEC. The document provides information about penny stocks and the nature and level of risks involved in investing in the penny stock market. A broker must also provide purchasers with bid and offer quotations and information regarding broker and salesperson compensation and make a written determination that the penny stock is a suitable investment for the purchaser and obtain the purchaser's written agreement to the purchase. Many brokers choose not to participate in penny stock transactions. Because of the penny stock rules, there may be less trading activity in penny stocks. Because shares of our common stock are currently subject to these penny stock rules, your ability to trade or dispose of shares of our common stock may be adversely affected.

We may not be able to achieve secondary trading of our stock in certain states because our common stock is no longer nationally traded, which could subject our stockholders to significant restrictions and costs.

Our common stock is not currently eligible for trading on the Nasdaq Capital Market or on a national securities exchange. Therefore, our common stock is subject to the securities laws of the various states and jurisdictions of the United States in addition to federal securities law. While we may register our common stock or qualify for exemptions for our common stock in one of more states, if we fail to do so the investors in those states where we have not taken such steps may not be allowed to purchase our stock or those who presently hold our stock may not be able to resell their shares without substantial effort and expense. These restrictions and potential costs could be significant burdens on our stockholders.

If we fail to maintain an effective system of internal controls over financial reporting, we may not be able to accurately report our financial results. As a result, current and potential stockholders could lose confidence in our financial reporting, which could harm our business and the trading price of our stock.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports. If we cannot maintain effective controls and reliable financial reports, our business and operating results could be harmed. For example, our small size and limited staffing levels do not allow for segregation of duties that exist at larger companies. We have conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2018 based on the criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework). Based on that evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2018. We continue to work on maintaining effective internal controls over financial reporting; however, there can be no assurance that a material weakness will not occur in the future. Any failure to implement and maintain controls over our financial reporting or difficulties encountered in the implementation of improvements in our controls, could cause us to fail to meet our reporting obligations. Any failure to maintain our internal controls over financial reporting or to address identified weaknesses in the future, if they were to occur, could also cause investors to lose confidence in our reported financial information, which could have a negative impact on the trading price of our stock.

Issuance of additional equity securities may adversely affect the market price of our common stock.

We are currently authorized to issue up to 150,000,000 shares of our common stock. As of December 31, 2018, we had 41,419,934 shares of common stock issued and outstanding. As of December 31, 2018, we also had approximately 24,381,000 warrants outstanding, 6,875,000 options outstanding and stockholder authorization to issue 2,465,000 additional stock options.

To the extent that additional shares of common stock are issued or options and warrants are exercised, holders of our common stock will experience dilution. In addition, in the event of any future issuances of equity securities or securities convertible into or exchangeable for common stock, holders of our common stock may experience dilution.

We are currently authorized to issue up to 15,000,000 shares of preferred stock. As of December 31, 2018, we had no shares of preferred stock outstanding. Our board of directors is authorized to issue preferred stock without any action on the part of our stockholders. Our board of directors also has the power, without stockholder approval, to set the terms of any such preferred stock that may be issued, including voting rights, conversion rights, dividend rights, preferences over our common stock with respect to dividends or if we liquidate, dissolve or wind up our business and other terms. If we issue preferred stock in the future that has preference over our common stock with respect to the payment of dividends or upon our liquidation, dissolution or winding up, or if we issue preferred stock with voting rights that dilute the voting power of our common stock, the market price of our common stock could decrease. Any provision permitting the conversion of any such preferred stock into our common stock could result in significant dilution to the holders of our common stock.

We also consider from time to time various strategic alternatives that could involve issuances of additional common or preferred stock, including but not limited to acquisitions and business combinations.

We have no plans to pay dividends on our common stock, and you may not receive funds without selling your common stock.

We have not declared or paid any cash dividends on our common stock, nor do we expect to pay any cash dividends on our common stock for the foreseeable future. We currently intend to retain any future earnings, if any, to finance our operations and growth and, potentially, for future stock repurchases and, therefore, we have no plans to pay cash dividends on our common stock. Any future determination to pay cash dividends on our common stock will be at the discretion of our board of directors and will be dependent on our earnings, financial condition, operating results, capital requirements, any contractual restrictions, and other factors that our board of directors deems relevant.

Accordingly, you may have to sell some or all of your common stock in order to generate cash from your investment in Mateon Therapeutics, Inc. You may not receive a gain on your investment when you sell our common stock and may lose the entire amount of your investment.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our office is located in South San Francisco, California, where we lease 5,275 square feet of general office space. The lease for this office space expires on June 30, 2019. We believe that other suitable office space would be available if we move to a different location upon the expiration of our current lease.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we may become involved in legal proceedings arising in the ordinary course of our business.

On July 20, 2018, Accelovance, Inc., a clinical trial vendor that the Company used in 2016 and 2017, notified the Company that it had filed an action in Superior Court of California, San Mateo County against Mateon alleging that Mateon failed to pay certain amounts owed under a 2016 Clinical Development Master Services Agreement and various amendments to and work orders under that agreement. On November 12, 2018, Accelovance and the Company entered into a settlement agreement under which Accelovance agreed to dismiss the action and Mateon agreed to make certain payments at the time of the agreement and by May 2019.

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

The Company's common stock trades on the OTCQB market, operated by OTC Markets, under the symbol "MATN", and has previously has traded on the OTCQX Market and the Nasdaq Capital Market, also under the symbol "MATN".

As of March 15, 2019, there were approximately 80 stockholders of record of the 41,419,934 outstanding shares of the Company's common stock.

Dividends

The Company has not declared or paid any cash dividends on its common stock since its inception in 1988 and does not intend to pay cash dividends in the foreseeable future. The Company presently intends to retain future earnings, if any, to finance the growth and development of its business.

Securities Authorized for Issuance Under Equity Compensation Plans

Information relating to compensation plans under which our equity securities are authorized for issuance is presented in Part III, Item 12 of this Form 10-K.

Unregistered Sales of Securities

None.

ITEM 6. SELECTED FINANCIAL DATA

Not applicable.

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

This "management's discussion and analysis of financial condition and results of operations" section contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements involve known and unknown risks and uncertainties that may cause our actual results or outcomes to be materially different from those anticipated and discussed herein. Important factors that we believe may cause such differences are discussed in the "Risk Factors" section of this Annual Report and in the "Safe Harbor for Forward-Looking Statements Under the Private Securities Litigation Reform Act of 1995" section of this Annual Report. In assessing forward-looking statements contained herein, readers are urged to read carefully all Risk Factors and cautionary statements contained in this Annual Report. Further, we operate in an industry sector where securities prices are volatile and may be influenced by regulatory and other factors beyond our control.

Overview

We are a clinical-stage biopharmaceutical company developing drugs for the treatment of orphan oncology indications. We currently have two investigational drugs in development, CA4P and OXi4503. CA4P is being developed for immuno-oncology applications, and we are planning for a clinical trial in patients with advanced metastatic melanoma who have progressed on currently approved treatments. OXi4503 has most recently been studied in relapsed/refractory acute myeloid leukemia, or AML, and myelodysplastic syndromes, or MDS.

Important and Recent Developments

During 2018, we primarily focused our resources on raising capital so that we could remain in business and advance our drug development programs.

In April 2018, we closed a private placement transaction in which we raised net proceeds of approximately $2.4 million from the sale of 14,875,000 shares of common stock and warrants to purchase 16,362,500 shares of common stock. Prior to this transaction, we had suspended patient enrollment into our clinical trial of OXi4503 for relapsed refractory AML and/or MDS.

Following the financing, we resumed enrollment of patients into Study OX1222, initiating treatment in the sixth cohort with a dose of 12.2 mg/m^2 of OXi4503 combined with cytarabine. This dose of OXi4503 was 25% greater than had been previously evaluated. Following treatment of four patients in the sixth cohort, the FDA placed a partial clinical hold on Study OX1222 based on two potential dose-limiting toxicities, or DLTs, observed in these patients. One patient experienced hypotension shortly following initial treatment with OXi4503 and cytarabine, and another patient experienced acute hypoxic respiratory failure approximately two weeks after receiving OXi4503 and cytarabine. Both events were deemed "possibly-related" to OXi4503, and both patients recovered following treatment. The protocol for Study OX1222 generally defines a DLT as any grade 3 serious adverse event (SAE) where a relationship to OXi4503 cannot be ruled out. When placing the study on partial clinical hold, the FDA indicated that we could continue dosing in the fifth cohort, 9.76 mg/m^2 of OXi4503, and that safety data would need to be reviewed and evaluated by FDA, including any additional data collected on patients receiving 9.76 mg/m^2 of OXi4503, before we could resume enrolling patients at the increased dose in the sixth cohort, or 12.2 mg/m^2 of OXi4503.

Both patients experiencing the potential DLTs described above were classified with progressive disease, as was one additional patient in this cohort who also received OXi4503 at a dose of 12.2 mg/m^2. The fourth patient evaluated in the sixth cohort was classified as having had a partial response (unconfirmed).

Thereafter, we enrolled three additional patients into Study OX1222, each receiving the fifth cohort dose of 9.76 mg/m^2 of OXi4503. Two of these patients experienced progressive disease, and one patient experienced a partial response (greater than 50% reduction in AML blast counts) after one cycle of treatment. The patient with the partial response was not able to enroll into a second cycle of treatment. There were no potential DLTs noted in any of these patients. We will require additional funding before we will be able to treat any additional patients in this clinical trial.

For the immuno-oncology program, our goal is to establish CA4P as a safe and effective therapy for the treatment of advanced melanoma when combined with the checkpoint inhibitor anti-PD-1. To this end we plan to initiate and conduct a clinical trial in a setting where patients with advanced melanoma who have previously failed therapy with anti-PD-1 receive continued anti-PD-1 therapy in combination with CA4P. We have chosen this patient population because they historically have a very poor prognosis regardless of treatment, and consequently any responses to the combination including CA4P could be due to the addition of CA4P. We believe that CA4P has the potential to increase the beneficial clinical effects of anti-PD-1 monotherapy in these patients. Data from animal models of various human cancer types, for example, show that CA4P in combination with an immuno-oncology agent significantly enhances the number and activity of cancer-fighting T-cells within tumors compared to animals treated with the immuno-oncology agent alone. In these animal models, CA4P significantly increased the number of cancer-fighting T-cells throughout the

tumor and doubled the amount of necrosis within the tumor compared to that observed for the immuno-oncology agent alone. Because of these and other findings, we are planning to initiate a clinical trial evaluating CA4P in combination with an approved immuno-oncology agent, such as Opdivo® (nivolumab, marketed by Bristol-Myers Squibb), in patients with advanced metastatic melanoma who have previously failed anti-PD-1 treatment. We are in the process of completing the protocol for this study prior to its submission to regulatory authorities in Italy, which is where our anticipated principal investigator is located. An additional site, located in the United Kingdom, is also planned for this study. We will require additional funding before we will be able to treat any patients in this planned clinical trial.

Critical Accounting Policies and Significant Judgments and Estimates

The preparation of financial statements in accordance with U.S. generally accepted accounting principles requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenues and expenses during the reporting periods. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances at the time we make such estimates. Actual results and outcomes may differ materially from our estimates, judgments and assumptions. We periodically review our estimates in light of changes in circumstances, facts and experience. The effects of material revisions in estimates are reflected in the financial statements prospectively from the date of the change in estimate. Our significant accounting policies are more fully described in Note 2 to our financial statements included elsewhere in this Annual Report.

We define our critical accounting policies as those accounting principles that require us to make subjective estimates and judgments about matters that are uncertain and are likely to have a material impact on our financial condition and results of operations, as well as the specific manner in which we apply those principles. We believe the critical accounting policies used in the preparation of our financial statements that require significant estimates and judgments are the following:

Research and development expenses

Research and development expenses consist of costs we incur for the development of our investigational drugs and, to a lesser extent, for preclinical research activities. Research and development costs are expensed as incurred. Research and development expenses include clinical trial costs, salaries and benefits of employees, including associated stock-based compensation, payments to clinical investigators, drug manufacturing costs, laboratory supplies and facility costs. Clinical trial costs are a significant component of our research and development expenses, and these can be difficult to accurately estimate. Included in clinical trial costs are fees paid to other entities that conduct certain research and development activities on our behalf, such as clinical research organizations, or CROs. We estimate clinical trial expenses based on the services performed pursuant to contracts with research institutions such as CROs and the actual clinical investigators. These estimates are based on actual time and expenses incurred by the CRO and the clinical investigators. Also included in clinical trial expenses are costs based on the level of patient enrollment into the clinical trial and the actual services performed under the related clinical trial agreement. Changes in clinical trial assumptions, such as the length of time estimated to enroll all patients, rate of screening failures, patient drop-out rates, number and nature of adverse event reports and the total number of patients enrolled can impact the average and expected cost per patient and the overall cost of the clinical trial. Based on patient enrollment reports and services provided, we may periodically adjust estimates for the clinical trial costs. If we do not identify costs that we have begun to incur or if we underestimate or overestimate the level of services performed, the length of time for these services or the costs of these services, our actual expenses could differ from our estimates.

Share-based compensation

We record the estimated fair value of all share-based payments issued to employees and other service providers. Our share-based payments consist primarily of stock options. The valuation of stock options is an inherently subjective process, since market values are not available for any stock options in our equity securities. Market values are also not available on long-term, non-transferable stock options in other equity securities. With no market values on options to trade in our common stock and no comparable market values on any long-term non-transferable stock options, the process of valuing our stock options is even more uncertain and subjective. Accordingly, we use a Black-Scholes option pricing model to derive an estimated fair value of the stock options which we issue. The Black-Scholes option pricing model requires certain input assumptions, including the expected term of the options and the expected volatility of our common stock. Changes in these assumptions could have a material impact on the estimated fair value that we record for share-based payments that we issue. We determine the term of the options based on the simplified method, which averages the vesting period and the contractual life of the stock option. We determine the expected volatility based on the historical volatility of our common stock over a period commensurate with the option's expected term. The Black-Scholes option pricing model also requires assumptions for risk-free interest rates and the expected dividend yield of our common stock, but we feel that these values are more objective and note that changes in these values do not have a significant impact on the estimated value of the options when compared to the volatility and term assumptions.

We are also required to estimate the level of award forfeitures expected to occur and record compensation expense only for those awards that are ultimately expected to vest. Accordingly, we perform a historical analysis of option awards that are forfeited prior to vesting, and record total stock option expense that reflects this estimated forfeiture rate.

Derivative Financial Instruments Indexed to the Company's Common Stock

We have generally issued derivative financial instruments, such as warrants, in connection with our equity offerings. We evaluate the terms of these derivative financial instruments in order to determine their accounting treatment in our financial statements. Key considerations include whether the financial instruments are freestanding and whether they contain conditional obligations. If the warrants are freestanding, do not contain conditional obligations and meet other classification criteria, we account for the warrants as an equity instrument. However, if the warrants contain conditional obligations, then we account for the warrants as a liability until the conditional obligations are met or are no longer relevant. Because no established market prices exist for the warrants that we issue in connection with our equity offerings, we must estimate the fair value of the warrants, which is as inherently subjective as it is for stock options, and for similar reasons as noted in the stock-based compensation section above. For financial instruments which are accounted for as a liability, we report any changes in their estimated fair values as gains or losses in our Statement of Comprehensive Loss.

RESULTS OF OPERATIONS

Years ended December 31, 2018 and 2017

Research and Development expenses

The table below summarizes the most significant components of our research and development expenses for the periods indicated and provides the amount and percentage change in these components (in thousands):

	Years ended December 31,		Change	
	2018	2017	Amount	%
Clinical studies	$ 262	$ 6,403	$(6,141)	-96%
Clinical study credits	(252)	—	(252)	n/a
Employee compensation and related	185	2,310	(2,125)	-92%
Stock-based compensation	190	381	(191)	-50%
Consulting and professional services	317	714	(397)	-56%
Drug manufacturing and storage	62	378	(316)	-84%
Other	51	285	(234)	-82%
Total research and development	**$ 815**	**$ 10,471**	**$(9,656)**	**-92%**

All research and development activities declined substantially in 2018 compared to 2017. In 2018, our research and development activities were limited to continuing our OX1222 Study of OXi4503 for relapsed/refractory AML and MDS and planning for a study of CA4P as an immuno-oncology agent in advanced melanoma. In 2017, our research and development activities also included the FOCUS Study, an approximately 90 patient phase 2 clinical trial of CA4P in platinum-resistant ovarian cancer. We terminated the FOCUS Study on September 26, 2017, and we also terminated nearly all research and development employees and many other research and development activities. Accordingly, expenses in all categories of research and development have declined significantly in 2018 compared to 2017.

Clinical study expenses declined by 96% in 2018 compared to 2017, due to the termination of the FOCUS Study in September 2017. During 2018, our only clinical study costs were related to the OX1222 Study of OXi4503 for relapsed/refractory AML, which enrolled seven patients since the trial reopened for enrollment in April 2018. Separately, in 2018 we received credits of $252,000 from vendors reducing charges and accruals recorded earlier from clinical work, with no comparable credits in 2017.

Employee compensation and related expenses declined by 92% in 2018 due to the termination of most of our workforce in September 2017. Employee stock-based compensation declined by 50% in 2018 compared to 2017, a lower percentage than employee compensation because we continued vesting certain stock options for former employees that continued to provide services to us, and incurred costs in 2018 for stock options granted to partially compensate for lower cash compensation.

Consulting and professional services expenses declined by 56% in 2018 compared to 2017 due to our termination of the FOCUS Study and the consulting work associated with this study. Partially offsetting the decline in FOCUS trial related consulting and professional services was an increase in consulting and professional services for our OX1222 Study in 2018 – this increase for OX1222 was due to services previously performed by employees.

Drug manufacturing and storage expenses declined by 84% in 2018 compared to 2017 because we limited the 2018 activities to required drug stability work, documentation and external storage fees for previously manufactured batches of our investigational drugs, whereas 2017 expenditures included additional activities, primarily to support clinical work on-going at the time.

Other expenses include facility related expenses which are generally allocated between research and development and general and administrative expenses based on employee headcount. With virtually no separate research and development headcount for 2018, there was minimal allocation of facility expenses to research and development, accounting for the significant percentage declines.

Our future research and development expenses will be dependent upon our ability to secure sufficient funding to continue drug development activities. Subject to our ability to secure additional funding, we expect research and development expenses to increase in 2019 compared to 2018.

General and administrative expenses

The table below summarizes the most significant components of our general and administrative expenses for the periods indicated and the amount and percentage change in these components (in thousands):

	Years ended December 31,		Change	
	2018	2017	Amount	%
Employee compensation and related	$ 562	$ 1,400	$ (838)	-60%
Stock-based compensation	554	454	100	22%
Consulting and professional services	655	1,116	(461)	-41%
Rent, insurance and other	416	401	15	4%
Total general and administrative	**$ 2,187**	**$ 3,371**	**$(1,184)**	**-35%**

General and administrative expenses declined in 2018 compared to 2017 due to significant cut-backs in all of our administrative activities in September 2017 following the termination of our FOCUS Study.

Employee compensation and related expenses decreased by 60% in 2018 compared to 2017 due to our 2018 reduction in headcount to only two employees, our Chief Executive and Financial Officers, who each have agreed to receive half of their regular salary in 2018. Conversely, employee stock-based compensation increased in 2018 compared to 2017 due to expenses associated with stock options granted to our two employees in June 2018 that vest over a shorter period than prior option grants, which results in a greater stock option charge over the shorter vesting period. The intent of these shorter vesting stock option grants was to partially compensate our officers for their materially reduced 2018 salaries.

Consulting and professional services expenses declined in 2018 and 2017 due to reductions across all of our operating activities.

Other expenses, which include facility related expenses such as rent, insurance expenses and taxes that are not based on income, are allocated between research and development and general and administrative expenses. Because of our curtailed research and development activities in 2018 compared to 2017, fewer costs were allocated to research and development, and the resulting balance of these expenses that remained in general and administrative expenses was higher.

Our future general and administrative expenses will be dependent upon our ability to secure sufficient funding to continue in business. Subject to our ability to secure additional funding, we expect general and administrative expenses to increase in 2019 compared to 2018.

Other Income and Expenses

We issued two series of warrants to the investors in our April 2018 equity financing transaction. The Series B Warrants required us to receive stockholder approval for additional authorized shares of common stock sufficient to allow for the exercise of the Series B Warrants. Because we did not have sufficient shares of authorized common stock at the time of the transaction, we accounted for the Series B Warrants as a liability, measured at fair value, until we received stockholder approval for additional authorized shares of common stock. The estimated fair value of the Series B Warrants was $886,000 when the warrants were issued, and it was $636,000 when shareholder approval was received. The decrease in fair value between these dates was primarily attributed to a decline in the price of the Company's common stock and a shorter estimated warrant term. The resulting $250,000 gain on change in the fair value of warrants was recorded in the second quarter of 2018 in non-operating income, and there was no comparable line-item in 2017.

LIQUIDITY AND CAPITAL RESOURCES

We measure liquidity by the cash and other capital we have available to fund our operations, which are primarily focused on the development of our drug candidates. To date, we have financed our operations principally through proceeds received from the sale of equity. We have experienced net losses in each year since our inception, and negative cash flows from operations in nearly every year. As of December 31, 2018, we had an accumulated deficit of over $295 million, including a net loss of approximately $2.7 million for 2018. As of December 31, 2018, we had cash of approximately $0.6 million, which we expect to be only sufficient to fund our planned operating activities for a short period of time. If we are unable to secure additional funding in the near term, we will be required to scale back or conclude all of our development activities and potentially all of our operations.

We will require additional capital before we can complete any further development of OXi4503 and/or CA4P. Additional funding may not be available to us on acceptable terms, or at all. If we are unable to access additional funds in the near term we may not be able to continue the development of our product candidates and we could be required to terminate operations altogether. Any additional equity financing, if available, may not be available on favorable terms and would be dilutive to our current stockholders. Debt financing, if available, may involve restrictive covenants and could also be dilutive to our current stockholders. If we are able to access funds through collaborative or licensing arrangements, we may be required to relinquish rights to some of our technologies or product candidates that we would otherwise seek to develop or commercialize on our own, on terms that are not favorable to us. Our ability to access capital when needed is not assured and, if access is not achieved on a timely basis, will materially harm our business, financial condition and results of operations.

Contractual Obligations

The following table presents information regarding payments required to be made on our non-cancelable contractual obligations as of December 31, 2018. Payments due under non-cancelable obligations include $112,000 for our facility lease and $663,000 for contractual obligations to a former clinical trial service provider.

	Amount (in thousands)
2019	$ 775
	$ 775

Our current drug development programs are based on a series of compounds called combretastatins, which we have exclusively licensed from Arizona State University, or ASU. If our current drug candidates are approved, we will be required to pay low to mid-single-digit royalties on future net sales of products associated with the ASU patent rights until these patent rights expire.

We also have an exclusive license from Bristol-Myers Squibb, or BMS, for certain patent rights to particular combretastatins, including CA4P. If CA4P is approved, we will be required to pay low-single-digit royalties on future net sales of products associated with the BMS patent rights until these patent rights expire.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our cash is maintained in U.S. dollar accounts. We have adopted a policy for the cash that we hold, and also for any cash equivalents and investments that we may hold, the primary objective of which is to preserve principal, while also maintaining liquidity to meet our operating needs and maximize yields to the extent possible. Although our investments can be subject to credit risk, we follow procedures to limit the amount of credit exposure in any single issue, issuer or type of investment. Our investments are also subject to interest rate risk and would be likely to decrease in value if market interest rates increase. However, due to the generally conservative nature of our investments and relatively short duration, we believe that interest rate risk is mitigated.

Although we may from time to time manufacture drugs and conduct preclinical or clinical trials outside of the United States, we believe our exposure to foreign currency risk to be immaterial.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

See Item 15 for a list of our Financial Statements and Schedules and any supplementary financial information filed as part of this Annual Report.

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

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of our Disclosure Controls and Procedures

The Securities and Exchange Commission requires that as of the end of the period covered by this Annual Report on Form 10-K, the Chief Executive Officer, or CEO, and the Chief Financial Officer, or CFO, evaluate the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) and report on the effectiveness of the design and operation of our disclosure controls and procedures. Based upon that evaluation, our CEO and CFO concluded that our disclosure controls and procedures were effective, as of December 31, 2018, to ensure that we record, process, summarize and report the information we must disclose in reports that we file or submit under the Exchange Act, within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to our management, including our CEO and CFO, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting, identified in connection with the evaluation of such control that occurred during the fourth quarter of our fiscal year ended December 31, 2018, which have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Under the supervision and with the participation of our management, including our CEO and CFO, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2018 based on the criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework). Based on that evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2018.

This Annual Report does not include an attestation report of the Company's registered public accounting firm regarding internal control over financial reporting. Management's report was not subject to attestation by the Company's registered public accounting firm pursuant to rules of the SEC.

Important Considerations

The effectiveness of our disclosure controls and procedures and our internal control over financial reporting is subject to various inherent limitations, including cost limitations, judgments used in decision making, assumptions about the likelihood of future events, the soundness of our systems, the possibility of human error, and the risk of fraud. In particular, the very small size of our company necessitates that there is less segregation of duties than there is at most other companies. Moreover, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions and the risk that the degree of compliance with policies or procedures may deteriorate over time. Because of these limitations, there can be no assurance that any system of disclosure controls and procedures or internal control over financial reporting will be successful in preventing all errors or fraud or in making all material information known in a timely manner to the appropriate levels of management. Because we are not an accelerated filer, as defined by Rule 12b-2 of the Exchange Act, OUM & Co., LLP was not required to issue an opinion on our internal control over financial reporting and, therefore, did not perform for the fiscal year ended December 31, 2018 an audit of our internal control over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act of 2002.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Directors and Executive Officers

The following table sets forth certain information about our directors and executive officers as of March 30, 2019.

Name	Age	Position
David J. Chaplin, Ph.D.	63	Director
Simon C. Pedder, Ph.D.	58	Director
Donald R. Reynolds	56	Director
Bobby W. Sandage, Jr., Ph.D.	65	Director
William D. Schwieterman, M.D.	61	Chairman of the Board of Directors, President and Chief Executive Officer
Matthew M. Loar	56	Chief Financial Officer

David J. Chaplin, Ph.D. Dr. Chaplin has been a member of our Board of Directors since January 2013. Dr. Chaplin also served as our Chief Scientific Officer from May 2015 through January 2018, when he retired from his position as Chief Scientific Officer. Prior to serving as our Chief Scientific Officer, Dr. Chaplin was President and Chief Executive Officer from May 2014 until May 2015, and Head of Research and Development from 2000 until 2011. From 1999 to 2000, Dr. Chaplin served as Vice President of Oncology at Aventis Pharma in Paris, where he was in charge of drug development from preclinical through phase 1 trials. Prior to the merger of Rhone Poulenc Rorer ("RPR") with Hoechst Marion Roussell, Dr. Chaplin was Senior Director of Oncology at RPR from 1998 to 1999. From 1992 to 1998, Dr. Chaplin headed up the Cancer Research Campaign's ("CRC") Tumor Microcirculation Group, based at the Gray Laboratory Cancer Research Trust, Mount Vernon Hospital, London. During this time, he was also a member of the

CRC Phase I/II clinical trials committee. Dr. Chaplin also served as Section Head of Cancer Biology at Xenova in the U.K. from 1990 to 1992, and held a senior staff appointment at the British Columbia Cancer Research Centre from 1982 to 1990. Dr. Chaplin has a B.Sc. in chemistry from the University of Essex, a M.Sc. in pharmacology from the University of Southampton, and completed his Ph.D. in tumor biology at the University of London. Since July 2012, Dr. Chaplin has also been a director of PHusis Therapeutics, Inc., a privately held biopharmaceutical company. Since July 2013, Dr. Chaplin has been a Director of Aston Biopharma, a private UK-based company that provides scientific consulting services. Dr. Chaplin was also appointed as a director of Fast Biopharma in June 2016. Fast Biopharma is a private company based in the UK and is involved in the generation of antibody-based therapeutics.

Simon C. Pedder, Ph.D. Dr. Pedder has been a member of our Board of Directors since March 2016. Dr. Pedder currently serves as the Vice President of Corporate Strategy and Business Development of Athenix, Inc., a private global specialty oncology pharmaceutical company. From April 2014 through June 2015, Dr. Pedder served as the President and Chief Executive Officer of Cellectar Biosciences, Inc., a biopharmaceutical company developing compounds for the treatment, diagnosis and imaging of cancer, and served as Cellectar's Acting Chief Executive Officer from October 2013 until April 2014. Dr. Pedder also served as a member of the board of directors of Cellectar from October 2013 until June 2015. From May 2004 through July 2012, Dr. Pedder served as President, Chief Executive Officer and as a director of Chelsea Therapeutics, Inc., a public development stage biopharmaceutical company. Dr. Pedder has a Bachelor of Environmental Studies from the University of Waterloo, a Master of Science in Toxicology from Concordia University and a Ph.D. in Pharmacology from the Medical College at the University of Saskatchewan College of Medicine. Dr. Pedder currently serves on the board of directors of Cerecor, Inc., Delcath Systems, Inc. and Atlantic Research Group, a private contract research organization.

Donald R. Reynolds Mr. Reynolds has been a member of our Board of Directors since October 2016. Mr. Reynolds is a practicing attorney and partner at the law firm of Wyrick Robbins Yates & Ponton LLP with experience in the areas of capital markets, securities law, mergers & acquisitions, venture capital and general corporate law. Mr. Reynolds also currently teaches Securities Regulation at Campbell University's law school and guest lectures on corporate governance at the University of North Carolina Chapel Hill's Kenan-Flagler Business School. Since Mr. Reynolds's elevation to partner at the law firm of Wyrick Robbins Yates & Ponton LLP in 1996, he has participated in a variety of the firm's internal committees, including the firm's Executive Committee, Strategic Planning Committee, Nominating Committee and Compensation Committee. Mr. Reynolds received his B.A. from Whitman College and his J.D. from New York University School of Law. He is currently licensed to practice law in California and North Carolina. Mr. Reynolds currently serves as a member of the board of directors of Atlantic Research Group, Inc., a private clinical research organization, and as Chair of the board of directors of USA Taekwondo, the non-profit national governing body for the sport.

Bobby W. Sandage, Jr., Ph.D. Dr. Sandage has been a member of our Board of Directors since October 2016. Dr. Sandage currently serves as the president and chief executive officer of Euclises Pharmaceuticals, Inc., a private drug discovery and development company advancing cyclooxygenase-2 (COX-2) inhibitors for cancer therapy, a position he has held since January 2015. Since August of 2016, he has served as a general partner of Cultivation Capital, a venture capital firm specializing in investments in private technology and life sciences companies. Dr. Sandage is currently a member of the board of directors of Immunophotonics, Inc., a private cancer vaccine development company, EDIS Solutions, LLC, a private healthcare information technology company, and Euclises Pharmaceuticals, Inc.

William D. Schwieterman, M.D. Since May 2015, Dr. Schwieterman has served as President and Chief Executive Officer of Mateon. Dr. Schwieterman has also been an independent consultant to biotech and pharmaceutical companies, including to Mateon, specializing in clinical development since July 2002. Dr. Schwieterman is a board-certified internist and a rheumatologist. Dr. Schwieterman was previously a part-time employee of Perceptive Advisors, LLC, a hedge fund based in New York, NY. From 2009 to 2014, Dr. Schwieterman was the Chief Medical Officer of Chelsea Therapeutics, Inc., a publicly traded biopharmaceutical development company, where he led the Chelsea Therapeutics clinical development team toward the approval of droxidopa for the treatment of symptoms of Parkinson's disease and other neurogenerative diseases. Dr. Schwieterman was formerly Chief of the Medicine Branch and Chief of the Immunology and Infectious Disease Branch in the Division of Clinical Trials at the Food and Drug Administration (the "FDA"). In these capacities and others, Dr. Schwieterman spent 10 years at the FDA in the Center for Biologics overseeing a wide range of clinical development plans for a large number of different types of molecules. Dr. Schwieterman holds a B.S. and M.D. from the University of Cincinnati. Dr. Schwieterman does not currently serve, and has not served in the past five years, as a member of the board of directors of another reporting company or of any registered investment company.

Matthew M. Loar Mr. Loar was appointed as our Chief Financial Officer in July 2015. Mr. Loar was previously Chief Financial Officer of KineMed, Inc., a privately held biotechnology company, from January 2014 to July 2015. From January 2010 to January 2014, Mr. Loar was an independent financial consultant to companies in the biopharmaceutical industry. While consulting, he also served as acting Chief Executive Officer and Chief Financial Officer of Neurobiological Technologies, Inc. (NTI), a publicly traded pharmaceutical company, from February 2010 through February 2019 and as Chief Financial Officer of Virolab, Inc., a biotechnology company, from May 2011 to August 2012. Previously, he was Chief Financial Officer of NTI from April 2008 to December 2009. Earlier in his career, Mr. Loar was Chief Financial Officer of Osteologix, Inc., a publicly traded pharmaceutical company, from 2006 to 2008, and of Genelabs Technologies, Inc., a publicly traded biopharmaceutical and diagnostics company, from 1995 to 2006. Mr. Loar received a B.A. in Legal Studies from the University of California, Berkeley and is a Certified Public Accountant (inactive) in California.

Committees of the Board of Directors

Our Board of Directors has established an audit committee, a compensation committee and a nominating and corporate governance committee, each of which has the composition and responsibilities described below. Members will serve on these committees until their resignation or as otherwise determined by our board of directors.

Audit Committee

The Audit Committee consists of Dr. Sandage (Chairman), Dr. Pedder and Mr. Reynolds. Our Audit Committee has the authority to retain and terminate the services of our independent registered public accounting firm, reviews our annual financial statements, considers matters relating to accounting policy and internal controls, and reviews the scope of our annual audits. The Board has determined that Dr. Sandage is an "audit committee financial expert," as the SEC has defined that term in Item 407 of Regulation S-K. The Board of Directors has adopted a charter for the Audit Committee, which is reviewed and reassessed annually by the Audit Committee. A copy of the Audit Committee's written charter is publicly available on our website at www.mateon.com. All members of our Audit Committee qualify as independent under the definition promulgated by The Nasdaq Stock Market and OTC Markets' OTCQX Rules for U.S. Companies.

Compensation Committee

The Compensation Committee consists of Dr. Pedder (Chairperson), Mr. Reynolds and Dr. Sandage. The Compensation Committee's roles and responsibilities include making recommendations to the Board of Directors regarding the compensation philosophy and compensation guidelines for our executives, the role and performance of our executive officers, and appropriate compensation levels for our Chief Executive Officer (or "CEO"), which are determined without the CEO present, and other executives based on a comparative review of compensation practices of similarly situated businesses. The Compensation Committee also makes recommendations to the Board regarding the design and implementation of our compensation plans and the establishment of criteria and the approval of performance results relative to our incentive plans. Our Compensation Committee also administers our 2015 Plan and our 2017 Plan. Each member of the Compensation Committee qualifies as independent under the definition promulgated by The Nasdaq Stock Market and OTC Markets' OTCQX Rules for U.S. Companies, and qualifies as a "Non-Employee Director" within the meaning of Rule 16b-3 under the Exchange Act.

The Compensation Committee reviews and assesses the three main components of each named executive officer's compensation: base salary, incentive compensation, and equity compensation. Adjustments to base salary are generally only made when there has been a change in the scope of the responsibilities of the named executive officer or when, based on a review of the base salary component of executive officers in companies of a similar size and stage of development, the Compensation Committee members believe that an adjustment is warranted in order to remain competitive. The executive management of the Company determines and agrees with the Compensation Committee on its corporate goals and objectives for the ensuing year. At the end of each year, the attainment of each objective is assessed and incentive awards may be made to each executive based on his or her contribution to achieving the objectives. Awards are made based on either provisions of an executive's employment agreement, or an assessment of each executive's equity compensation position relative to the Company's other executives.

The Compensation Committee also typically reviews our director compensation on at least an annual basis.

The Compensation Committee has the authority to directly retain the services of independent consultants and other experts to assist in fulfilling its responsibilities, although has not done so within the past two years.

Nominating and Governance Committee

The Nominating and Governance Committee consists of Mr. Reynolds (Chairman), Dr. Pedder and Dr. Sandage. The Nominating and Governance Committee's role and responsibilities include making recommendations to the full Board as to the size and composition of the Board and making recommendations as to particular nominees to the Board. All members of the Nominating and Governance Committee qualify as independent under the definition promulgated by The Nasdaq Stock Market and OTC Markets' OTCQX Rules for U.S. Companies.

Director Independence

Our Board of Directors has reviewed the composition of our Board of Directors and its committees and the independence of each director. Based upon information requested from and provided by each director concerning his background, employment and affiliations, including family relationships, our Board of Directors has determined that each of our directors, with the exception of Dr. Schwieterman and Dr. Chaplin, is an "independent director" as defined under Rule 5605(a)(2) of the Nasdaq Listing Rules.

Compensation Committee Interlocks and Insider Participation

None of the members of our Compensation Committee is or has been employed by us in the last completed fiscal year. In addition, none of our executive officers served as a member of the Board of Directors or Compensation Committee, or other committee serving an equivalent function, of any entity that has an executive officer who serves on our Board or Compensation Committee during 2018.

Corporate Code of Ethics

We have adopted a Corporate Code of Conduct and Ethics (the "Code of Conduct") that applies to all of our employees, including our CEO and CFO. The text of the Code of Conduct has been filed as an exhibit to our Annual Report on Form 10-K for the year ended December 31, 2014, and is posted on our website at www.mateon.com. Disclosure regarding any amendments to, or waivers from provisions of the code of conduct and ethics that apply to our directors and principal executive and financial officers will be included in a Current Report on Form 8-K within four business days following the date of the amendment or waiver.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors, executive officers and persons who own more than 10% of our common stock to file with the SEC and us initial reports of beneficial ownership and reports of changes in beneficial ownership of our common stock and other equity securities. For these purposes, the term "other equity securities" would include options granted under the Mateon Therapeutics, Inc. 2005 Stock Plan (the "2005 Stock Plan"), the Mateon Therapeutics, Inc. 2015 Equity Incentive Plan (the "2015 Plan") and the Mateon Therapeutics, Inc. 2017 Equity Incentive Plan (the "2017 Plan"). To our knowledge, based solely on a review of the forms and written representations received by us from our Section 16 reporting persons, during the fiscal year ended December 31, 2018, all Section 16(a) filing requirements applicable to the reporting persons were properly and timely satisfied.

ITEM 11. EXECUTIVE COMPENSATION

Summary Compensation Table

The following table shows the total compensation paid or accrued during 2018 and 2017 to our President and Chief Executive Officer and our Chief Financial Officer, the latter of which is our only other executive officer earning more than $100,000 in 2018.

Name and Principal Position	Year	Salary	Bonus	Option Awards (1)	All Other Compensation	Total
William D. Schwieterman, M.D.	2018	$205,000	$ —	$ 155,875	$ 103,217 (2)	$464,092
President and Chief Executive Officer	2017	362,692	—	154,508	130,825 (2)	648,025
Matthew M. Loar	2018	162,500	—	116,906	—	279,406
Chief Financial Officer	2017	287,500	—	98,323	—	385,823

(1) The fair values for all stock awards in this table represent the estimated award value at the time of grant using a Black-Scholes option pricing model with the following weighted-average assumptions:

Weighted Average Assumptions	2018	2017
Risk-free interest rate	2.8%	2.0%
Expected life (years)	5.2	6.0
Expected volatility	88%	88%
Dividend yield	0.0%	0.0%

The values of stock option grants shown in the table represent the full estimated Black-Scholes option value at the grant date, pursuant to compensation disclosure rules of the SEC. However, the stock option grants in the table vest over one to four years, and the values shown do not take into account subsequent increases or decreases in actual value to the recipient. See the Narrative Disclosure below for information regarding the number of shares granted to each of the named executive officers. See Note 6 to our Financial Statements included in this Annual Report on Form 10-K for the year ended December 31, 2018 for additional information regarding the assumptions used to determine the fair value of each of the

option awards in this table. See also our discussion of stock-based compensation under "Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies and Significant Judgments and Estimates" in the Form 10-K.

(2) Represents costs for a furnished apartment in San Francisco, California, the cost of one economy class round-trip ticket between San Francisco, California and Mobile, Alabama per month, and the income tax impact of these expenses.

Narrative Disclosure to Summary Compensation Table

Dr. William D. Schwieterman. On May 15, 2015, we entered into an employment agreement with Dr. Schwieterman for his service as President and Chief Executive Officer, which was subsequently amended on July 31, 2015. Pursuant to the terms of this agreement, Dr. Schwieterman is entitled to receive an annual base salary of $410,000. In addition, he is eligible for an annual bonus of up to fifty percent of his then-current annual base salary, based on the Board of Directors' assessment of his performance and the Company's performance. On October 2, 2017, the Company and Dr. Schwieterman agreed to a 50% reduction in his base annual salary, to $205,000, with reinstatement to previous levels contingent on the Company raising additional funding of at least $4 million or the execution of a licensing or collaboration agreement with certain conditions. Dr. Schwieterman continues to receive the reduced salary as of the date of the filing of this report. For calendar years 2018 and 2017, the Board of Directors determined that Dr. Schwieterman would not receive an annual bonus due to the financial condition of the Company.

Dr. Schwieterman's employment agreement also provides for the Company to pay the costs of furnished housing in San Francisco, California and the cost of one economy class roundtrip airplane ticket between San Francisco, California and Mobile, Alabama per month.

Dr. Schwieterman may terminate his employment upon written notice to us. We may terminate his employment without prior written notice for cause, or without cause on sixty days' prior written notice. If his employment is terminated by us for cause, by reason of his death or disability or by Dr. Schwieterman without good reason, we will pay him the amount of our accrued obligations as of the date of such termination. If his employment is terminated by us other than for cause or by Dr. Schwieterman with good reason, we will pay him the accrued obligations, an amount equal to twelve months of his applicable base salary and twelve months of health insurance premiums pursuant to the Consolidated Omnibus Budget Reconciliation Act of 1985 ("COBRA"), subject to the conditions outlined in the agreement.

If his employment is terminated by us other than for cause or by Dr. Schwieterman with good reason in the one year following the effective date of a change in control of the Company, we will pay him our accrued obligations, an amount equal to twelve months of his applicable base salary and twelve months of COBRA premiums on the same conditions described above. In addition, all of his unvested equity awards outstanding on the date of termination shall vest and be immediately exercisable. Dr. Schwieterman has also agreed not to directly or indirectly solicit for employment, during his employment and for a twelve-month period following termination of his employment, any person who is (or has been in the past year) a Company officer, executive or key employee.

All payments made and benefits available to Dr. Schwieterman in connection with his employment agreement will comply with Internal Revenue Code Section 409A in accordance with the terms of his employment agreement.

On January 12, 2017, the Company granted Dr. Schwieterman options to purchase 550,000 shares of our common stock with an exercise price of $0.375 per share, which vest over a four-year period. On June 20, 2018, the Company granted Dr. Schwieterman options to purchase 1,000,000 shares of our common stock with an exercise price of $0.22 per share, which vest in monthly installments over a one-year period. The one-year vesting period for the option granted in 2018 was chosen to partially compensate Dr. Schwieterman for the below-market salary that has been effective since October 2, 2017.

Matthew M. Loar. On July 20, 2015, we entered into an employment agreement with Mr. Loar for his service as our Chief Financial Officer. Pursuant to the terms of this agreement, Mr. Loar is entitled to receive an annual base salary of $325,000. In addition, he is eligible for an annual bonus of up to thirty-five percent of his then-current annual base salary, based on the Board of Directors' assessment of his performance and the Company's performance. On October 2, 2017, the Company and Mr. Loar agreed to a 50% reduction in his base annual salary, to $162,500, with reinstatement to previous levels contingent on the Company raising additional funding of at least $4 million or the execution of a licensing or collaboration agreement with certain conditions. Mr. Loar continues to receive the reduced salary as of the date of the filing of this report. For calendar years 2018 and 2017, the Board of Directors determined that Mr. Loar would not receive an annual bonus due to the financial condition of the Company.

Mr. Loar may terminate his employment agreement upon written notice to us. We may terminate the employment agreement without prior written notice for cause, or without cause on sixty days' prior written notice. If his employment is terminated by us for cause, by reason of his death or disability or by Mr. Loar without good reason, we will pay him the amount of our accrued obligations, as of the date of such termination. If his employment is terminated by us other than for cause or by Mr. Loar with good reason, we will pay him the accrued obligations, an amount equal to twelve months of his applicable base salary and twelve months of health insurance premiums pursuant to COBRA, subject to the conditions outlined in the agreement.

If his employment is terminated by us other than for cause or by Mr. Loar with good reason in the one year following the effective date of a change in control of the Company, we will pay him our accrued obligations, an amount equal to twelve months of his applicable base salary and twelve months of COBRA premiums on the same conditions described above. In addition, all of his unvested equity awards outstanding on the date of termination shall vest and be immediately exercisable. Mr. Loar has also agreed not to directly or indirectly solicit for employment, during his employment and for a twelve-month period following termination of his employment, any person who is (or has been in the past year) a Company officer, executive or key employee.

All payments made and benefits available to Mr. Loar in connection with his employment agreement will comply with Internal Revenue Code Section 409A in accordance with the terms of his employment agreement.

On January 12, 2017, the Company granted Mr. Loar options to purchase 350,000 shares of our common stock with an exercise price of $0.375 per share, which vest over a four-year period. On June 20, 2018, the Company granted Mr. Loar options to purchase 750,000 shares of our common stock with an exercise price of $0.22 per share, which vest in monthly installments over a one-year period. The one-year vesting period for the option granted in 2018 was chosen to partially compensate Mr. Loar for the below-market salary that has been effective since October 2, 2017.

Outstanding Equity Awards at Fiscal Year-End

The following table shows all outstanding grants of stock options as of December 31, 2018 to each of the executive officers named in the Summary Compensation Table. There were no grants of unvested stock awards outstanding as of December 31, 2018. Exercise prices shown are rounded to the nearest whole cent.

	Option Awards			
Name	Number of Securities Underlying Unexercised Options Exercisable	Number of Securities Underlying Unexercised Options Unexercisable	Option Exercise Price	Option Expiration Date
William D. Schwieterman, M.D.	5,140	—	$ 5.30	1/02/2019
President and Chief Executive Officer	10,060	—	2.70	7/01/2019
	4,880	—	2.79	1/02/2020
	5,280	—	2.60	7/02/2020
	268,750	31,250	1.43	5/28/2025
	—	75,000	1.43	5/28/2025
	343,750	156,250	0.73	3/21/2026
	263,542	286,458	0.38	1/12/2027
	500,000	500,000	0.22	6/20/2028
Matthew M. Loar	128,125	21,875	$ 1.37	7/20/2025
Chief Financial Officer	180,468	82,032	0.73	3/21/2026
	167,708	182,292	0.38	1/12/2027
	375,000	375,000	0.22	6/20/2028

Pension Benefits

We do not have any qualified or non-qualified defined benefit plans.

Nonqualified Deferred Compensation

We do not have any non-qualified defined contribution plans or other deferred compensation plans.

Potential Payments Upon Termination or Change-In-Control

We have entered into certain agreements and maintain certain plans that may require us to make certain payments and/or provide certain benefits to Dr. Schwieterman and Mr. Loar in the event of a termination of their employment or a change of control of the Company. The following table summarizes the potential payments to Dr. Schwieterman and Mr. Loar assuming that one of the described termination events occurs. The table assumes that the event occurred on December 31, 2018, the last day of our fiscal year. On the final trading day of our fiscal year the closing price of our common stock on OTCQB Market was $0.08 per share.

William D. Schwieterman, M.D.

Executive Benefits and Payments Upon Termination	Termination within 12 months Following Change in Control	Voluntary Termination by Executive or Death	Involuntary Not for Cause Termination or Termination by Executive with Good Reason	For Cause Termination	Disability
Base Salary	$ 410,000	$ —	$ 410,000	$ —	$ —
Annual Bonus (50% of Base Salary)	Executive entitled to Annual Bonus related to most recently completed calendar year if earned and not already paid	Executive entitled to Annual Bonus related to most recently completed calendar year if earned and not already paid	Executive entitled to Annual Bonus related to most recently completed calendar year if earned and not already paid	N/A	Executive entitled to Annual Bonus related to most recently completed calendar year if earned and not already paid
Acceleration of Vesting of Equity	100%	0%	0%	0%	0%
Stock Options:					
Number of Stock Options	1,048,958	—	—	—	—
Value upon Termination	$ —	$ —	$ —	$ —	$ —
Vested Stock Received:					
Number of Shares	—	—	—	—	—
Value upon Termination	$ —	$ —	$ —	$ —	$ —
Relocation Reimbursement	N/A	N/A	N/A	N/A	N/A
Deferred Compensation Payout	N/A	N/A	N/A	N/A	N/A
Post-Term Health Care	Up to 12 months	N/A	Up to 12 months	N/A	N/A
	$ 30,437	$ —	$ 30,437	$ —	$ —
Excise Tax Gross Up	N/A	N/A	N/A	N/A	N/A

Matthew M. Loar

Executive Benefits and Payments Upon Termination	Termination within 12 months Following Change in Control	Voluntary Termination by Executive or Death	Involuntary Not for Cause Termination or Termination by Executive with Good Reason	For Cause Termination	Disability
Base Salary	$ 325,000	$ —	$ 325,000	$ —	$ —
Annual Bonus (35% of Base Salary)	Executive entitled to Annual Bonus related to most recently completed calendar year if earned and not already paid	Executive entitled to Annual Bonus related to most recently completed calendar year if earned and not already paid	Executive entitled to Annual Bonus related to most recently completed calendar year if earned and not already paid	N/A	Executive entitled to Annual Bonus related to most recently completed calendar year if earned and not already paid

Acceleration of Vesting of Equity	100%	0%	0%	0%	0%
Stock Options:					
Number of Stock Options	661,199	—	—	—	—
Value upon Termination	$ —	$ —	$ —	$ —	$ —
Vested Stock Received:					
Number of Shares	—	—	—	—	—
Value upon Termination	$ —	$ —	$ —	$ —	$ —
Relocation Reimbursement	N/A	N/A	N/A	N/A	N/A
Deferred Compensation Payout	N/A	N/A	N/A	N/A	N/A
Post-Term Health Care	Up to 12 months	N/A	Up to 12 months	N/A	N/A
	$ 30,437	$ —	$ 30,437	$ —	$ —
Excise Tax Gross Up	N/A	N/A	N/A	N/A	N/A

The information set forth above is described in more detail in the Narrative Disclosure to the Summary Compensation Table.

As defined in the employment agreements, a “Change in Control” means the following during the employment term:

(1) any “Person” (as such term is used in Sections 13(d) and 14(d) of the Exchange Act) becomes the “Beneficial Owner” (as defined in Rule 13d-3 under said Act), directly or indirectly, of securities of the Company representing more than fifty percent of the total voting power represented by the Company’s then outstanding voting securities (excluding for this purpose any such voting securities held by the Company or its affiliates or by any employee benefit plan of the Company) pursuant to a transaction or a series of related transactions which the Board of Directors does not approve; or

(2) a merger or consolidation of the Company whether or not approved by the Board of Directors, other than a merger or consolidation which would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity or the parent of such corporation) at least fifty percent of the total voting power represented by the voting securities of the Company or such surviving entity or parent of such corporation, as the case may be, outstanding immediately after such merger or consolidation; or

(3) the stockholders of the Company approve an agreement for the sale or disposition by the Company of all or substantially all of its assets; or

(4) a change in the composition of the Board of Directors, as a result of which fewer than a majority of the directors are Incumbent Directors, and provided in each such case the Change in Control also meets the requirements of a “Change in Control Event” within the meaning of Section 409A(a)(2)(A)(v) of the Code and Treasury Regulation Section 1.409A-3(i)(5). “Incumbent Directors” mean the directors who either (A) are directors of the Company as of the date of this Agreement, or (B) are elected, or nominated for election, to the Board of Directors with the affirmative votes of at least a majority of the Incumbent Directors at the time of such election or nomination (but shall not include an individual whose election or nomination is in connection with an actual or threatened proxy contest relating to the election of directors to the Company).

In each such case the Change of Control must also meet the requirements of a “Change of Control Event” within the meaning of Section 409(a)(2)(A)(v) of the Code.

Each of Dr. Schwieterman and Mr. Loar will be entitled to certain benefits as described in the table above if his employment is terminated by the Company for reasons other than cause or by him with good reason. "Cause," as defined in the employment agreements, means:

(1) Substantial failure to perform any of his duties or to follow reasonable, lawful directions of the Board or any officer to whom the party reports;

(2) willful misconduct or willful malfeasance in connection with his employment;

(3) commission of, conviction of, or plea of nolo contendere to, any crime constituting a felony under the laws of the United States or any state thereof, or any other crime involving moral turpitude;

(4) material breach of any provision of the employment agreement, the By-laws or any other written agreement with the Company;

(5) engaging in misconduct that causes significant injury to the Company, financial or otherwise, or to its reputation; or

(6) any act, omission or circumstance constituting cause under the law governing the employment agreement.

"Good Reason," as defined in the employment agreements, means the Company:

(1) materially reduces the officer's title or responsibilities;

(2) relocates its headquarters more than sixty (60) miles from their current location (unless the relocation results in the headquarters being closer to the officer's residence);

(3) materially reduces the officer's base salary; or

(4) breaches a material term of the officer's employment agreement.

Good Reason must also meet the requirements for a good reason termination in accordance with Code Section 409A, and any successor statute, regulation and guidance thereto.

Director Compensation

The following table shows the total compensation paid or accrued during 2018 to each of our non-employee directors. Directors who are employed by us are not compensated for their service on our Board of Directors.

Name	Fees Earned or Paid in Cash (1)	Option Awards (2)	Total
David J. Chaplin, Ph.D.	$ —	$ 40,000	$40,000
Simon C. Pedder, Ph.D.	$ —	$ 40,000	$40,000
Donald R. Reynolds	$ —	$ 40,000	$40,000
Bobby W. Sandage, Jr., Ph.D.	$ —	$ 40,000	$40,000

(1) Effective with quarterly board fees for the fourth quarter of 2017, the Board of Directors has suspended all cash payments for board service until the Company's financial position improves sufficiently to warrant reinstatement of these fees.

(2) The exercise price of these options is $0.22 per share, which was the market value of the Company's common stock on the date of grant, with each option exercisable for 258,171 shares of common stock. The fair values for the awards granted were estimated at the date of grant using the Black-Scholes option pricing model with the following weighted-average assumptions:

Weighted Average Assumptions	
Risk-free interest rate	2.8%
Expected life (years)	5.2
Expected volatility	88%
Dividend yield	0.00%

Although the above options vest one year subsequent to grant, pursuant to rules of the SEC the values in the table represents the full value at the grant date only and the values do not take into account subsequent increases or decreases in actual value to the recipient. See Note 6 to our Financial Statements included in our Annual Report on Form 10-K for the year ended December 31, 2018, for additional information regarding the assumptions used to determine the fair value of each of the option awards in this table. See also our discussion of stock-based compensation under "Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies and Significant Judgments and Estimates" in the Form 10-K.

The following is a description of the standard compensation arrangements under which our non-employee directors are compensated for their service as directors, including as members of the various Committees of our Board.

Fees. In October 2016, the Board of Directors amended and restated its director compensation policy (as amended and restated, the "2016 Director Compensation Policy"). In accordance with the 2016 Director Compensation Policy, the following cash fees are payable to non-employee directors quarterly in arrears at the end of each quarter:

Board or Committee of Board	Annual Cash Retainer Amount
Member of the Board	$ 40,000
Chairperson of the Board (in addition to compensation as a Member of the Board)	$ 20,000
Chairperson of Audit, Compensation and Nominating and Governance Committee (in addition to compensation as a Member of the Board and as a member of the respective committee)	$ 3,000
Audit Committee Member (in addition to compensation as a Member of the Board)	$ 5,000
Compensation and Nominating and Governance Committee Member (in addition to compensation as a Member of the Board)	$ 3,000

A new non-employee director joining the Board during the course of the year on a date other than the first day of the fiscal quarter will receive his or her cash compensation for that quarter pro-rated.

In October 2017, the Board of Directors suspended all cash payments for board service until the Company's financial position improved sufficiently to warrant reinstatement of cash fees. As of the date of the filing of this report, board members continue to receive no fees.

Equity Grants. In accordance with the 2016 Director Compensation Policy, on the date of each annual meeting, each non-employee director is granted a non-qualified stock option to purchase shares of our common stock valued at $40,000 on the date of grant, which will vest in full one year from the grant date, subject to the applicable director's continued service on the Board as of the vesting date.

A new non-employee director joining the Board will be granted an option to purchase shares of our common stock valued at $50,000 on or shortly after the first date of his or her service, which will vest over a three-year period subject to the director's continued service on the Board as of each vesting date.

Each option granted under the 2016 Director Compensation Policy will have an exercise price equal to the closing price of our common stock on the applicable trading market on the date of grant, or if the date of grant is not a trading day, the closing price on the next trading day following the date of grant, and each option will have a term of six years. The number of options to be received under the 2016 Director Compensation Policy will be calculated using the Black-Scholes valuation method.

Options granted pursuant to the 2016 Director Compensation Policy are subject to the terms and conditions of the applicable stock plan. Under the terms of the 2015 Incentive Plan and the 2017 Incentive Plan, directors may be granted shares of common stock, stock-based awards, and/or stock options to purchase shares of common stock.

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

Security Ownership of Certain Beneficial Owners and Management

The following tables set forth certain information with respect to the beneficial ownership of our common stock as of March 15, 2019 for (a) each of our executive officers named in the Summary Compensation Table, (b) each of our directors, (c) all of our current directors and executive officers as a group, and (d) each stockholder known by us to own beneficially more than 5% of our common stock. Beneficial ownership is determined in accordance with the rules of the SEC and includes voting or investment power with respect to the securities. We deem shares of common stock that may be acquired by an individual or group within 60 days of March 15, 2019 pursuant to the exercise of options or warrants to be outstanding for the purpose of computing the percentage ownership of such individual or group, but such shares are not deemed to be outstanding for the purpose of computing the percentage ownership of any other person shown in the tables. Except as indicated in footnotes to these tables, we believe that the stockholders named in these tables have sole voting and investment power with respect to all shares of common stock shown to be beneficially owned by them based on information provided to us by these stockholders. Ownership determinations are based on 41,419,934 shares of common stock outstanding on March 15, 2019. Unless otherwise indicated, the address of each stockholder is c/o Mateon Therapeutics, Inc., 701 Gateway Boulevard, Suite 210, South San Francisco, CA 94080.

Name of Beneficial Owner	Number of Shares of Mateon Common Stock Beneficially Owned and Nature of Ownership	Percent of Class
William D. Schwieterman, M.D.	3,094,408 (1)	7.1%
Matthew M. Loar	1,713,785 (2)	4.0%
Donald R. Reynolds	764,493 (3)	1.8%
David J. Chaplin, Ph.D.	746,414 (4)	1.8%
Simon C. Pedder, Ph.D.	312,758 (5)	*
Bobby W. Sandage, Jr., Ph.D.	234,493 (5)	*
All current directors and executive officers as a group (6 persons)	6,866,351 (6)	14.0%

* Less than 1%.

(1) Includes 1,843,661 shares Dr. Schwieterman has the right to acquire upon the exercise of stock options and 625,000 shares upon the exercise of warrants.

(2) Includes 1,163,785 shares Mr. Loar has the right to acquire upon the exercise of stock options and 250,000 shares upon the exercise of warrants.

(3) Includes 234,493 shares Mr. Reynolds has the right to acquire upon the exercise of stock options and 250,000 shares upon the exercise of warrants.

(4) Includes 745,408 shares Dr. Chaplin has the right to acquire upon the exercise of stock options.

(5) Represents the right to acquire shares upon the exercise of stock options.

(6) Includes 4,534,598 shares that the current directors and executive officers have the right to acquire upon the exercise of stock options and 1,125,000 shares upon the exercise of warrants.

The determination that there were no persons, entities or groups known to us to beneficially own more than 5% of our outstanding common stock as of March 15, 2019, was based on a review of all statements filed with respect to us since the beginning of the past fiscal year with the SEC pursuant to Section 13(d) or 13(g) of the Exchange Act.

Equity Compensation Plan Information

The following table provides certain aggregate information with respect to all of the Company's equity compensation plans in effect as of December 31, 2018.

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted-Average Exercise Price of Outstanding Options	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))
Equity compensation plans approved by security holders	4,872,000	$ 0.92	2,378,000
Equity compensation plans not approved by security holders	1,913,000	0.31	87,000
Total	6,875,000	$ 0.75	2,465,000

Brief Description of equity compensation plan not approved by security holders

On January 12, 2017, the Board of Directors adopted and approved the Mateon Therapeutics, Inc. 2017 Equity Incentive Plan (the "2017 Plan"). The 2017 Plan allows the Company, under the direction of the Compensation Committee, to make grants of stock options, restricted and unrestricted stock awards, and other stock-based awards to employees, consultants and directors. The purpose of these awards is to attract and retain key individuals, further align employee and stockholder interests, and provide additional incentive for them to promote our success. The 2017 Plan provides for the issuance of up to 2,000,000 shares of the Company's common stock. Any stock options granted under the 2017 Plan must be non-qualified stock options, which are not intended to meet the requirements of Section 422 of the Internal Revenue code. Options generally vest over a period of time, may not be exercised unless they are vested, and no option may be exercised after the end of the term set forth in the award agreement.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

Our Audit Committee reviews and approves in advance all related person transactions.

Our Board of Directors has reviewed the materiality of any relationship that each of our directors has with the Company, either directly or indirectly. Based upon this review, our Board has determined that each of the nominees except for Dr. Chaplin and Dr. Schwieterman qualify as "independent directors" as defined under the rules of The Nasdaq Stock Market and OTC Market Rules for U.S. Companies.

In April 2018, we closed a private placement transaction in which we received net proceeds of approximately $2.4 million. The private placement transaction consisted of the sale of 59.5 units at a purchase price of $50,000 per unit, and each unit contained 250,000 shares of our common stock and warrants to purchase up to 250,000 shares of our common stock. The purchase price of the common stock was $0.20 per share and warrants are exercisable at $0.40 per share. Dr. Schwieterman purchased 2.5 units and Mr. Loar and Mr. Reynolds each purchased one unit in the private placement transaction. The purchases of Dr. Schwieterman, Mr. Loar and Mr. Reynolds were reviewed in advance by disinterested directors on the Audit Committee.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The following table presents fees for professional audit services rendered by our independent public accounting firm, OUM & Co., LLP, for the audit of the Company's annual financial statements for the years ended December 31, 2018 and December 31, 2017, and fees billed for other services rendered during those periods.

	2018	2017
Audit fees (1)	$181,744	$213,095
Audit-related fees	—	—
Tax fees	—	—
All other fees	—	3,543
	$181,744	**$216,638**

(1) Audit fees consisted of audit work performed on the audit of the annual financial statements, review of quarterly financial statements, as well as work that generally only the independent registered public accounting firm can reasonably be expected to provide, such as the provision of consents and comfort letters in connection with the filing of registration statements and statutory audits. We engaged OUM & Co., LLP as our independent public accounting firm on December 9, 2016.

Policy on Audit Committee Pre-Approval of Audit and Permissible Non-audit Services of Independent Registered Public Accounting Firm

Consistent with SEC policies regarding auditor independence, the Audit Committee has responsibility for appointing, setting compensation, and overseeing the work of the independent registered public accounting firm. In recognition of this responsibility, the Audit Committee has established a policy to pre-approve all audit and permissible non-audit services provided by the independent registered public accounting firm.

Prior to engagement of the independent registered public accounting firm for the next year's audit, management will submit an aggregate of services expected to be rendered during that year for each of four categories of services to the Audit Committee for approval.

1. **Audit** services include audit work performed in the preparation and audit of the annual financial statements, review of quarterly financial statements, as well as work that generally only the independent auditor can reasonably be expected to provide, such as the provision of consents and comfort letters in connection with the filing of registration statements.
2. **Audit-related** services are for assurance and related services that are traditionally performed by the independent auditor, including due diligence related to mergers and acquisitions, employee benefit plan audits, and special procedures required to meet certain regulatory requirements.
3. **Tax** services consist principally of assistance with tax compliance and reporting, as well as certain tax planning consultations.
4. **Other Fees** are those associated with services not captured in the other categories. The Company generally does not request such services from the independent auditor.

Prior to engagement, the Audit Committee pre-approves these services by category of service. The fees are budgeted, and the Audit Committee requires the independent registered public accounting firm and management to report actual fees versus the budget periodically throughout the year by category of service. During the year, circumstances may arise when it may become necessary to engage the independent registered public accounting firm for additional services not contemplated in the original pre-approval. In those instances, the Audit Committee requires specific pre-approval before engaging the independent registered public accounting firm.

The Audit Committee may delegate pre-approval authority to one or more of its members. The member to whom such authority is delegated must report, for informational purposes only, any pre-approval decisions to the Audit Committee at its next scheduled meeting.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

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

(1) *Financial Statements*

See financial statements listed in the accompanying "Index to Financial Statements" covered by the Report of Independent Registered Public Accounting Firm.

(2) *Financial Statement Schedule*

No schedules are submitted because they are not applicable, not required or because the information is included in the Financial Statements as Notes to Financial Statements.

(3) *Exhibits*

The following is a list of exhibits filed as part of this Annual Report on Form 10-K.

Exhibit Number	Description	Incorporated by Reference			Filed Herewith
		Form	Filing Date	Exhibit Number	
3.1	Restated Certificate of Incorporation of the Registrant, as amended by Certificates of Amendment dated June 22, 1995, November 15, 1996, July 14, 2005, June 2, 2009, February 8, 2010, August 5, 2010, February 22, 2011, May 29, 2012, December 27, 2012, July 17, 2013, June 16, 2016 and June 20, 2018.	10-Q	8/14/2018	3.1	
3.2	Amended and Restated By-Laws of the Registrant.	8-K	6/17/2016	3.2	
4.1	Specimen Common Stock Certificate. *	10-Q	8/2/2016	4.1	
4.2	Form of Series A/B Common Stock Purchase Warrant.	8-K	4/11/2013	4.1	
4.3	Form of Common Stock Purchase Warrant.	8-K	9/20/2013	4.1	
4.4	Form of Common Stock Purchase Warrant.	S-1/A	1/31/2014	4.9	
4.5	Form of Placement Agent Purchase Warrant.	S-1/A	1/31/2014	4.8	
4.6	Form of Common Stock Purchase Warrant.	8-K	2/14/2014	4.1	
4.7	Form of Placement Agent Purchase Warrant.	8-K	2/14/2014	4.2	
4.8	Form of Common Stock Purchase Warrant.	8-K	3/20/2015	4.1	
4.9	Form of Common Stock Purchase Warrant.	8-K	5/23/2014	4.1	
4.10	Form of Series A Warrant to purchase common stock	8-K	4/16/2018	4.1	
4.11	Form of Series B Warrant to purchase common stock	8-K	4/16/2018	4.2	
4.12	Form of Placement Agent Purchase Warrant	S-1	6/13/2018	4.12	
10.1	Technology Development Agreement, dated as of May 27, 1997, between the Registrant and the Arizona Board of Regents, acting for and on behalf of Arizona State University.	10-K	4/15/1998	10.9	
10.2	License Agreement No. 206-01.LIC by and between the Arizona Board of Regents, acting on behalf of and for Arizona State University, and OXiGENE Europe AB, dated August 2, 1999.	10-K/A	8/12/2003	10.27	
10.3	Amendment and Confirmation of License Agreement No. 206-01.LIC, dated as of June 10, 2002, between the Registrant and the Arizona Board of Regents, acting for and on behalf of Arizona State University.	10-Q	8/14/2002	10.29	
10.4	Research Collaboration and License Agreement, dated as of December 15, 1999, between OXiGENE Europe AB and Bristol-Myers Squibb Company. *	8-K	12/28/1999	99.1	
10.5	Termination Agreement by and between OXiGENE Europe AB and Bristol-Myers Squibb Company dated as of February 15, 2002.	10-Q	8/14/2002	10.14	
10.6	Research and License Agreement between the Registrant and Baylor University, dated June 1, 1999.	10-K/A	8/12/2003	10.28	
10.7	Agreement to Amend Research and License Agreement between the Registrant and Baylor University, dated April 23, 2002.	10-K/A	8/12/2003	10.29	

10.8	Addendum to Research and License Agreement between the Registrant and Baylor University, dated April 14, 2003.	10-K/A	8/12/2003	10.30
10.9	Lease between Broadway 701 Gateway Fee LLC, a Delaware Limited Liability Company, as Landlord, and the Registrant, as Tenant, dated October 10, 2008.	10-K	3/30/2009	10.59
10.10	Third Amendment to Lease, dated as of April 1, 2013, by and between the Registrant and DWF III Gateway, LLC, a Delaware limited liability company.	10-Q	5/9/2013	10.1
10.11	Fourth Amendment to Lease, dated April 28, 2014, by and between the Registrant and DWF III Gateway, LLC.	10-Q	5/8/2014	10.1
10.12	Mateon Therapeutics, Inc. 2005 Stock Plan (as amended and restated on January 12, 2017). +	8-K	1/13/2017	10.3
10.13	Form of Incentive Stock Option Agreement under Mateon's 2005 Stock Plan. +	10-K	3/14/2006	10.29
10.14	Form of Non-Qualified Stock Option Agreement under Mateon's 2005 Stock Plan. +	10-K	3/14/2006	10.30
10.15	Form of Restricted Stock Agreement under Mateon's 2005 Stock Plan. +	10-K	3/14/2006	10.31
10.16	Mateon Therapeutics, Inc. 2015 Equity Incentive Plan (as amended and restated on May 7, 2018). +	Definitive Proxy Statement on Schedule 14A	05/07/2018	Appendix A
10.17	Form of Option Agreement under Mateon's 2015 Equity Incentive Plan. +	10-Q	8/6/2015	10.6
10.18	Mateon Therapeutics, Inc. 2017 Equity Incentive Plan. +	8-K	1/13/2017	10.1
10.19	Form of Option Agreement under Mateon's 2017 Equity Incentive Plan. +	8-K	1/13/2017	10.2
10.20	Form of Indemnification Agreement. +	10-Q	8/13/2012	10.2
10.22	Mateon Therapeutics, Inc. Amended and Restated Non-Employee Director Compensation Policy, effective October 25, 2016. +	8-K	10/28/2016	10.2
10.23	Employment Agreement by and between the Registrant and William D. Schwieterman, dated as of May 12, 2015. +	10-Q	8/6/2015	10.1
10.24	Amendment No. 1 to Employment Agreement by and between William D. Schwieterman, dated as of July 31, 2015. +	10-Q	8/6/2015	10.7
10.25	Amendment No. 2 to Employment Agreement by and between the Registrant and William D. Schwieterman, dated as of October 2, 2017. +	10-Q	11/14/2017	10.1
10.26	Second Amended and Restated Employment Agreement by and between the Registrant and David J. Chaplin, effective as of January 1, 2017. +	8-K	10/28/2016	10.1
10.27	Amendment No. 1 to Second Amended and Restated Employment Agreement by and between the Registrant and David J. Chaplin, dated as of October 2, 2017. +	10-Q	11/14/2017	10.3

10.28	Employment Agreement by and between the Registrant and Matthew M. Loar, dated as of July 20, 2015. +	10-Q	8/6/2015	10.2	
10.29	Amendment No. 1 to Employment Agreement by and between the Registrant and Matthew M. Loar, dated as of October 2, 2017. +	10-Q	11/14/2017	10.2	
10.30	Form of Subscription Agreement for private placement transaction entered into on April 12, 2018	8-K	4/16/2018	10.1	
10.31	Form of Registration Rights Agreement for private placement transaction entered into on April 12, 2018	8-K	4/16/2018	10.2	
10.32	Engagement Letter, dated February 7, 2018, by and between the Registrant and Divine Capital Markets LLC	8-K	4/16/2018	10.3	
14.1	Corporate Code of Conduct and Ethics.	10-K	3/30/2015	14.1	
23.1	Consent of Independent Registered Public Accounting Firm.				x
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) and 15d-14(a).				x
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) and 15d-14(a).				x
32.1	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				x
101.1	Interactive Data Files for the fiscal years ended December 31, 2018 and December 31, 2017				x
101.INS	XBRL Instance Document				x
101.SCH	XBRL Taxonomy Extension Schema				x
101.CAL	XBRL Taxonomy Extension Calculation Linkbase				x
101.DEF	XBRL Taxonomy Extension Definition Linkbase				x
101.LAB	XBRL Taxonomy Extension Label Linkbase				x
101.PRE	XBRL Taxonomy Extension Presentation Linkbase				x

* Confidential treatment has been granted for portions of this Exhibit. Redacted portions filed separately with the Securities and Exchange Commission.
\+ Management contract or compensatory plan or arrangement.

ITEM 16. 10-K SUMMARY

None.

SIGNATURES

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

Mateon Therapeutics, Inc.

/S/ WILLIAM D. SCHWIETERMAN

By: William D. Schwieterman
Chief Executive Officer

Date: April 10, 2019

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

Signature	Title	Date
/s/ WILLIAM D. SCHWIETERMAN William D. Schwieterman	President, Chief Executive Officer and Chairman of the Board and Director (Principal executive officer)	April 10, 2019
/s/ MATTHEW M. LOAR Matthew M. Loar	Chief Financial Officer (Principal financial and accounting officer)	April 10, 2019
/s/ DAVID J. CHAPLIN David J. Chaplin	Director	April 10, 2019
/s/ SIMON C. PEDDER Simon C. Pedder	Director	April 10, 2019
/s/ DONALD R. REYNOLDS Donald R. Reynolds	Director	April 10, 2019
/s/ BOBBY W. SANDAGE, JR. Bobby W. Sandage, Jr.	Director	April 10, 2019

Mateon Therapeutics, Inc.

Index to Financial Statements

The following financial statements of Mateon Therapeutics, Inc.:

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Statements of Stockholders' Equity/(Deficit)	F-5
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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Stockholders and Board of Directors
Mateon Therapeutics, Inc.
South San Francisco, California

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Mateon Therapeutics, Inc. (the "Company") as of December 31, 2018 and 2017, the related statements of comprehensive loss, stockholders' equity (deficit) and cash flows for each of the two years in the period ended December 31, 2018, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2018**,** in conformity with accounting principles generally accepted in the United States of America.

Going Concern Uncertainty

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the financial statements, the Company has suffered recurring losses from operations and has an accumulated deficit and a working 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 2. The financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

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

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

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

/s/ OUM & CO. LLP

San Francisco, California
April 10, 2019
We have served as the Company's auditor since 2016.

Mateon Therapeutics, Inc.
Balance Sheets
(in thousands, except per share data)

	December 31, 2018	December 31, 2017
ASSETS		
Current assets:		
Cash	$ 629	$ 1,115
Prepaid expenses and deposits	170	22
Total current assets	799	1,137
Property and equipment, net	—	2
Other assets	—	33
Total assets	$ 799	$ 1,172
LIABILITIES AND STOCKHOLDERS' DEFICIT		
Current liabilities:		
Accounts payable	$ 915	$ 788
Accrued compensation and employee benefits	24	73
Accrued clinical trial expenses	27	509
Other accrued liabilities	195	279
Total current liabilities	1,161	1,649
Commitments and contingencies		
Stockholders' deficit:		
Preferred stock, $0.01 par value, 15,000 shares authorized; No shares issued and outstanding	—	—
Common stock, $0.01 par value, 150,000 and 70,000 shares authorized; 41,420 and 26,545 shares issued and outstanding	414	265
Additional paid-in capital	294,236	291,533
Accumulated deficit	(295,012)	(292,275)
Total stockholders' deficit	(362)	(477)
Total liabilities and stockholders' deficit	$ 799	$ 1,172

See accompanying notes.

Mateon Therapeutics, Inc.
Statements of Comprehensive Loss
(in thousands, except per share data)

	2018	2017
Operating expenses:		
Research and development	$ 815	$ 10,471
General and administrative	2,187	3,371
Total operating expenses	3,002	13,842
Loss from operations	(3,002)	(13,842)
Gain on change in fair value of warrants	250	—
Interest income	16	35
Other income (expense)	(1)	(5)
Net loss and comprehensive loss	$ (2,737)	$(13,812)
Basic and diluted net loss per share attributable to common stock	$ (0.07)	$ (0.52)
Weighted-average number of common shares outstanding	37,251	26,545

See accompanying notes.

Mateon Therapeutics, Inc.
Statements of Stockholders' Equity/(Deficit)
(in thousands)

	Common Stock		Additional Paid-In	Accumulated	Total Stockholders'
	Shares	Amount	Capital	Deficit	Equity/(Deficit)
Balance December 31, 2016	26,545	$ 265	$290,698	$ (278,463)	$ 12,500
Net loss and comprehensive loss	—	—	—	(13,812)	(13,812)
Stock based compensation expense	—	—	835	—	835
Balance December 31, 2017	26,545	$ 265	$291,533	$ (292,275)	$ (477)
Net loss and comprehensive loss	—	—	—	(2,737)	(2,737)
Stock based compensation expense	—	—	744	—	744
Change in fair value of warrants	—	—	(250)	—	(250)
Issuance of common stock in a private placement, net of issuance costs of $617	14,875	149	2,209	—	2,358
Balance December 31, 2018	41,420	$ 414	$294,236	$ (295,012)	$ (362)

See accompanying notes.

Mateon Therapeutics, Inc.
Statements of Cash Flows
(in thousands)

	2018	2017
Operating activities:		
Net loss	$(2,737)	$(13,812)
Adjustments to reconcile net loss to net cash used in operating activities:		
Gain on change in fair value of warrants	(250)	—
Depreciation	2	9
Stock-based compensation	744	835
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(4)	2,001
Accounts payable and accrued expenses	(599)	35
Net cash used in operating activities	(2,844)	(10,932)
Investing activities		
Sale of short-term investments	—	8,512
Financing activities		
Proceeds from issuance of common stock and warrants, net of issuance costs	2,358	—
Decrease in cash and cash equivalents	(486)	(2,420)
Cash and cash equivalents at beginning of year	1,115	3,535
Cash and cash equivalents at end of year	$ 629	$ 1,115

See accompanying notes.

MATEON THERAPEUTICS, INC.

Notes to Financial Statements
December 31, 2018

1. Description of Business

Mateon Therapeutics, Inc. ("Mateon" or the "Company") is a clinical-stage biopharmaceutical developing drugs for the treatment of orphan oncology indications. The Company has two investigational drugs in development, CA4P and OXi4503. CA4P is being developed for immuno-oncology applications, and the Company is planning for a clinical trial in patients with advanced metastatic melanoma who have progressed on currently approved treatments. OXi4503 has most recently been studied in relapsed/refractory acute myeloid leukemia ("AML") and myelodysplastic syndromes ("MDS"). The Company was incorporated under the name OXiGENE, Inc. in 1988 in New York, reincorporated in 1992 in Delaware, and in 2016 changed its name to Mateon Therapeutics, Inc.

2. Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates.

Cash Equivalents

Highly liquid investments with original maturities of three months or less at the date of purchase are considered to be cash equivalents. Cash equivalents are stated at fair value.

Concentration of Credit Risk

The Company has no significant off balance sheet concentrations of credit risk. The only significant financial instrument that potentially subjects the Company to concentrations of credit risk is cash, which is held with one financial institution.

Property and Equipment

Property and equipment, including leasehold improvements, are recorded and stated at cost. Depreciation is calculated using the straight-line method over the estimated useful lives of the assets, which range from three to five years, or the applicable lease term, whichever is less.

Accrued Clinical Trial Expenses

The Company utilizes contract research organizations ("CROs"), independent clinical investigators, and other third-party service providers to assist with the execution of its clinical trials. The Company records costs for clinical trial activities based upon the estimated amount of services provided but not yet invoiced for each clinical trial, and includes these costs in accrued liabilities on its Balance Sheets and within research and development expenses on its Statements of Comprehensive Loss. Contracts for clinical trials vary significantly in length and are usually composed of a fixed management fee, variable indirect reimbursable costs, monthly costs and amounts owed on a per patient basis. The Company monitors both the activity and patient enrollment levels of each clinical trial to the extent possible through communication with each service provider, detailed invoice and task completion review, analysis of actual expenses against budget, pre-approval of any changes in scope, and review of contractual terms. As a result, accrued clinical trial expenses represent the Company's reasonably estimated contractual liability to outside service providers at any particular point in time. These estimates may or may not match the actual services performed by the service providers as determined by actual patient enrollment levels and other variable activity costs.

Derivative Financial Instruments Indexed to the Company's Common Stock

The Company has generally issued derivative financial instruments, such as warrants, in connection with its equity offerings. The Company evaluates the terms of these derivative financial instruments in order to determine their accounting treatment in the Company's financial statements. Key considerations include whether the financial instruments are freestanding and whether they contain conditional obligations. If the warrants are freestanding, do not contain conditional obligations and meet other classification criteria, the Company accounts for the warrants as an equity instrument. If the warrants are freestanding but contain conditional obligations, then the Company accounts for the warrants as a liability until the conditional obligations are met or are no longer relevant. For financial instruments which are accounted for as a liability, the Company reports changes in their estimated fair value as a gain or loss in the Company's Statement of Comprehensive Loss.

Research and Development Expenses

The Company charges all research and development costs, both internal and external, to expense when incurred. The Company's research and development expenses consist primarily of clinical trial expenses, personnel costs, including salaries, benefits and stock-based compensation, costs associated with manufacturing the Company's drug product for clinical use, storage and testing of the drug product under specified conditions, and required regulatory filings, licenses and fees, and overhead allocations consisting of various support and facility-related costs.

Clinical trial expenses represent a significant component of the Company's research and development expenses. A large portion of the costs for the Company's clinical trials may be paid to or through CROs. The Company monitors levels of services provided under each significant contract including the extent of patient enrollment and other activities through communications with its CROs and with investigator sites. Costs are accrued for clinical studies performed by CROs over the service periods specified in the contracts and estimates are adjusted, if required, based upon ongoing review of the level of effort and costs actually incurred by the CROs.

The manufacturing of the Company's drug investigational drugs is outsourced to third-party manufacturers. The drug manufacturing costs are expensed as incurred.

Comprehensive Net Loss

For the periods presented, there are no components of other comprehensive income or accumulated comprehensive income and the net loss is equal to the comprehensive loss.

Stock-based Compensation

The Company expenses the estimated fair value of all share-based payments issued to employees on a straight-line basis over the vesting period. The Company has equity incentive plans that provides for the award of stock options, restricted stock and stock appreciation rights to employees, directors and consultants to the Company.

Patents and Patent Applications

The Company has filed applications for patents in connection with various product candidates and technologies being developed. Costs associated with patent applications and maintaining patents are expensed as general and administrative expense as incurred.

Income Taxes

The Company accounts for income taxes using the liability method whereby tax rates are applied to cumulative temporary differences between carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes based on when and how they are expected to affect the tax return.

Subsequent Events

The Company reviews all activity subsequent to year end but prior to the issuance of the financial statements for events that could require disclosure or which could impact the carrying value of assets or liabilities as of the balance sheet date.

Recent Accounting Pronouncements

In February 2016, the FASB issued ASU No. 2016-2, "Leases (Topic 842)," which requires substantially all leases, including operating leases, to be recognized by lessees on their balance sheet as a right-of-use asset and corresponding lease liability. This ASU is effective for the Company's interim and annual reporting periods beginning January 1, 2019 and early adoption is permitted. The Company is currently in the process of completing its evaluation of the impact that the adoption of this ASU will have on its financial statements, however, upon adoption, the Company expects to record an additional asset on its balance sheet for the right-of-use for the Company's office space, with an approximately equal offsetting liability for the present value of the remaining amounts due under the lease. As of December 31, 2018, the Company had just one lease, for its principal executive office, which expires on June 30, 2019.

In August 2016, The FASB issued ASU No. 2016-15 "Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments," which addresses several cash flow issues that diversify in practice. The new guidance is effective for fiscal years beginning after December 15, 2017 and for interim periods within those years. The Company adopted this ASU as of January 1, 2018, and its adoption did not have a material impact on the Company's financial statements.

Going Concern Evaluation

The Company has experienced net losses every year since inception and, as of December 31, 2018, had an accumulated deficit of approximately $295 million. The Company has no source of revenue and does not expect to receive any product revenue in the near future. The Company expects to incur significant additional operating losses over the next several years, principally as a result of the Company's plans to continue clinical trials for its investigational drugs. The principal source of the Company's working capital to date has been the proceeds from the sale of equity. As of December 31, 2018, the Company had only $0.6 million in cash and its current liabilities were $1.2 million. Based on the Company's planned operations, the Company's management expects its cash to only support its operations for a short period of time. Therefore, the Company will need to secure additional near-term funding or it could be forced to curtail or terminate operations. Because the Company does not currently have a guaranteed source of working capital that will sustain planned operations for the next twelve months, Management has determined that there is substantial doubt about the Company's ability to continue as a going concern. The Company will need to raise capital in order to fund its planned operations for any length of time. If the Company is unable to access additional funds when needed, it may not be able to continue the development of its investigational drugs and the Company could be required to delay, scale back or eliminate some or all of its development programs and operations. Any additional equity financing, if available to the Company, may not be available on favorable terms and would most likely be dilutive to its current stockholders. Any debt financing, if available, may involve restrictive covenants. If the Company accesses funds through collaborative or licensing arrangements, it may be required to relinquish rights to some of its technologies or product candidates that it would otherwise seek to develop or commercialize on its own, on terms that are not favorable to the Company. The Company's ability to access capital when needed is not assured and, if not achieved on a timely basis, will materially harm its business, financial condition and results of operations.

3. Cash

As of December 31, 2018 and 2017, the company's cash balances did not include any cash equivalents, and the Company did not hold any short-term investments.

4. Fair Value Measurements

As of December 31, 2018 and 2017, there were no financial assets other than cash that were measured at fair value on a recurring basis. Fair value is defined as the price at which an asset could be exchanged or a liability transferred in a transaction between knowledgeable, willing parties in the principal or most advantageous market for the asset or liability.

5. Property and equipment

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

	December 31,	
	2018	2017
Equipment	$ 226	$ 226
Furniture and fixtures	36	36
Leasehold improvements	6	6
Total assets	268	268
Less accumulated depreciation	(268)	(266)
Total property and equipment, net	**$ —**	**$ 2**

6. Stockholders' Equity

April 2018 Private Placement

In April 2018, the Company entered into a private placement transaction, raising net proceeds of approximately $2.4 million from the sale of 14,875,000 shares of common stock and warrants to purchase 14,875,000 shares of common stock. The purchase price of the common stock was $0.20 per share and the exercise price of the warrants is $0.40 per share. The warrants expire two years from the date they initially became exercisable. In connection with the private placement transaction, the Company also issued 1,487,500 warrants to the placement agent. The placement agent warrants have an exercise price of $0.20 per share and expire five years from the date of issuance.

The warrants issued in the April 2018 private placement consist of 7,437,500 Series A warrants (the "Series A Warrants") and 7,437,500 Series B warrants (the "Series B Warrants"). The exercise price of all warrants is payable in cash and there are no cashless exercise provisions.

The Series A Warrants were immediately exercisable upon issuance and expire on April 12, 2020. The Company has accounted for the Series A Warrants as an equity instrument from the date of issuance.

When the Company completed the private placement transaction, the exercisability and expiration of the Series B Warrants were dependent on the Company's receipt of stockholder approval for an increase in the number of authorized shares of the Company's common stock. Accordingly, on the date of issuance, the Company accounted for the Series B Warrants as a liability, utilizing the Black-Scholes option pricing model to determine the fair value of these derivative financial instruments based on the following key measurements and assumptions: $0.26 per share stock price; $0.40 per share exercise price; 2.2 year term to maturity; 2.37% risk-free interest rate and 100.9% annualized volatility, resulting in an estimated fair value of the warrant liability of $886,000.

On June 20, 2018, the Company's stockholders approved an increase in the number of authorized shares of common stock, satisfying the conditional obligation of the Series B Warrants. The Series B Warrants became exercisable on June 20, 2018 and expire on June 20, 2020. Following the stockholder approval, the Company determined that liability accounting was no longer appropriate and that equity accounting was appropriate for the Series B Warrants. The Company utilized the Black-Scholes option pricing model to determine the Series B Warrants' fair value as of June 20, 2018, based on the following key measurements and assumptions: $0.22 per share stock price; $0.40 per share exercise price; 2.0 year term to maturity; 2.56% risk-free interest rate and 100.0% annualized volatility, resulting in an estimated fair value of the warrant liability of $636,000.

The decrease in the fair value of the Series B Warrants from the date of issuance through the satisfaction of the conditional criteria has been classified as a "Gain on change in fair value of warrants" in the Statement of Comprehensive Loss.

Warrants

The following is a summary of the Company's outstanding common stock warrants:

Expiration Date	Exercise Price	December 31, 2018	December 31, 2017
		(in thousands)	
04/16/18	$ 3.40	—	1,460
09/23/18	$ 2.80	—	147
02/11/19	$ 2.56	293	293
02/18/19	$ 2.75	1,872	1,872
08/28/19	$ 2.90	2,700	2,700
03/20/20	$ 2.13	234	234
03/25/20	$ 1.71	2,920	2,920
04/12/20	$ 0.40	7,437	—
06/20/20	$ 0.40	7,437	—
04/30/23	$ 0.20	1,488	—
Total Warrants Outstanding		**24,381**	**9,626**

No warrants were exercised during the years ended December 31, 2018 and 2017.

Except for the Series B Warrants described above, all warrants outstanding at December 31, 2018 were recorded as equity at the time of issuance.

Options and restricted stock

As of December 31, 2018, options to purchase common stock were outstanding under three stock option plans – the 2017 Equity Incentive Plan (the "2017 Plan"), the 2015 Equity Incentive Plan (the "2015 Plan") and the 2005 Stock Plan (the "2005 Plan"). Under the 2017 Plan, up to 2,000,000 shares of the Company's common stock may be issued pursuant to awards granted in the form of nonqualified stock options, restricted and unrestricted stock awards, and other stock-based awards. Under the 2015 and 2005 Plans, taken together, up to 7,250,000 shares of the Company's common stock may be issued pursuant to awards granted in the form of incentive stock options, nonqualified stock options, restricted and unrestricted stock awards, and other stock-based awards. Employees, consultants, and directors are eligible for awards granted under the 2017 and 2015 Plans. Since the adoption of the 2015 Plan, no further awards may be granted under the 2005 Plan, although options previously granted remain outstanding in accordance with their terms.

The following is a summary of the Company's stock option activity under its 2017, 2015 and 2005 Plans:

	Options Available for Grant	Options Outstanding	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life	Aggregate Intrinsic Value
	(in thousands)			(years)	(in thousands)
Balance at December 31, 2016	549	4,177	$ 1.47	8.1	
Options granted	(2,484)	2,484	$ 0.42		
Options forfeited	1,781	(1,781)	$ 1.16		
Options authorized	2,000	—			
Balance at December 31, 2017	1,846	4,880	$ 1.05	7.6	
Options granted	(3,033)	3,033	$ 0.22		
Options forfeited	1,128	(1,128)	$ 0.65		
Options authorized	2,524	—			
Balance at December 31, 2018	**2,465**	**6,785**	**$ 0.75**	**7.1**	**$ —**
Vested and exercisable at December 31, 2018		**3,740**	**$ 0.79**	**6.9**	**$ —**
Vested and expected to vest at December 31, 2018		**6,303**	**$ 0.60**	**7.1**	**$ —**
Unvested at December 31, 2018		**3,045**	**$ 0.70**		

As of December 31, 2018, there was approximately $0.5 million of unrecognized compensation cost related to stock option awards that is expected to be recognized as expense over a weighted average period of approximately 1 year.

The weighted average fair value of stock options issued in 2018 and 2017 was $0.16 and $0.34, respectively.

The fair values for the stock options granted were estimated at the date of grant using the Black-Scholes option pricing model with the following weighted-average assumptions:

	Year ended December 31,	
	2018	2017
Risk-free interest rate	2.8%	2.0%
Expected life (years)	5.2	6.0
Expected volatility	88%	88%
Dividend yield	0%	0%

In calculating the estimated fair value of its stock options, the Company used the Black-Scholes option pricing model which requires the consideration of the following variables for purposes of estimating fair value:

- the stock option exercise price,
- the grant date price of the Company's common stock,
- the expected term of the option,
- the expected volatility of the Company's common stock,
- the expected dividends on the Company's common stock, and
- the risk-free interest rate for the expected option term.

Stock Option Exercise Price and Grant Date Price of the Company's common stock — The closing market price of the Company's common stock on the date of grant.

Expected Term — The expected term of options represents the period of time for which the options are expected to be outstanding, and is calculated based on the average of the vesting period and the option term.

Expected Volatility — The expected volatility is a measure of the amount by which the Company's stock price is expected to fluctuate during the term of the option granted. The Company determines the expected volatility based on the historical volatility of its common stock over a period commensurate with the option's expected term.

Expected Dividends — Because the Company has never declared or paid any cash dividends on any of its common stock and does not expect to do so in the foreseeable future, the Company uses an expected dividend yield of zero to calculate the grant date fair value of a stock option.

Risk-Free Interest Rate — The risk-free interest rate is the implied yield available on U.S. Treasury issues with a remaining life consistent with the option's expected term on the date of grant.

The Company estimates the level of award forfeitures expected to occur and records compensation expense only for those awards that are ultimately expected to vest.

7. Net Loss Per Share

Basic and diluted net loss per share was calculated by dividing the net loss per share attributed to the Company's common shares by the weighted-average number of common shares outstanding. Diluted net loss per share includes the effect of all dilutive, potentially issuable common equivalent shares as defined using the treasury stock method. All of the Company's common stock equivalents are anti-dilutive due to the Company's net loss position for all periods presented. Accordingly, common stock equivalents of approximately 6,785,000 stock options and 24,381,000 warrants at December 31, 2018 and 4,880,000 stock options and 9,626,000 warrants at December 31, 2017, were excluded from the calculation of weighted average shares for diluted net loss per share.

8. Income Taxes

The components of the Company's deferred tax assets are as follows (in thousands):

	December 31,	
	2018	2017
Net operating loss carryforwards	$ 56,124	$ 55,265
Stock based compensation	368	297
Research and development credits	3,273	3,229
Fixed assets	3,096	3,477
Accruals	32	35
Total Deferred tax assets	62,893	62,303
Valuation allowance	(62,893)	(62,303)
Net deferred tax asset	**$ —**	**$ —**

After consideration of the available evidence, both positive and negative, the Company has determined that a full valuation allowance at December 31, 2018 and 2017 is necessary to reduce the deferred tax assets to the amount that will more likely than not be realized. The valuation allowance increased by $590,000 in 2018 and decreased by $29,213,000 in 2017. Since all of the Company's deferred tax assets have been reserved for in a valuation allowance, the Company has not recorded a provision for or benefit from income taxes in the accompanying financial statements.

At December 31, 2018, the Company had federal net operating loss carry-forwards of approximately $247 million generated before January 1, 2018 which will expire in various amounts from 2020 through 2037. At December 31, 2018, the Company also had federal net operating loss carry-forwards of approximately $4 million which have no expiration date, but are subject to an 80% of taxable income use limitation. At December 31, 2018, the Company had California state net operating loss carry-forwards of approximately $49 million which will expire in various amounts from 2028 through 2038. At December 31, 2018, the Company had federal research and development tax credits of approximately $3.3 million which will expire in 2021 and California state research and development tax credits of approximately $1.3 million which have no expiration date.

The utilization of the Company's net operating losses and credits may be subject to a substantial annual limitation due to the "change in ownership" provisions of the Internal Revenue Code of 1986, as amended, and similar state provisions. The annual limitation may result in the expiration of net operating losses and credits before utilization.

A reconciliation of the federal statutory rate to the Company's effective tax rate is as follows:

	Years ended December 31,	
	2018	2017
Federal Statutory Rate	21.0%	34.0%
State Tax	(0.7)	0.2
Change in Valuation Allowance	(21.5)	216.8
Stock-Based Compensation	(1.4)	(0.5)
Research Credits	0.8	0.3
Other	1.8	(0.1)
Tax Reform - Tax Rate Change	—	(250.7)
Provision for income taxes	**0.0%**	**0.0%**

At December 31, 2018, the Company had $1,159,000 of unrecognized tax benefits related to research and development credits. The change in unrecognized tax benefits is as follows (in thousands):

Unrecognized tax benefits as of December 31, 2016	$1,072
Increase in current year unrecognized tax benefits	75
Unrecognized tax benefits as of December 31, 2017	1,147
Decrease in prior year unrecognized tax benefits	(3)
Increase in current year unrecognized tax benefits	15
Unrecognized tax benefits as of December 31, 2018	**$1,159**

The Company does not expect its unrecognized tax benefits to change significantly over the next twelve months. As of December 31, 2018, due to a valuation allowance against the Company's deferred tax assets, none of the unrecognized tax benefits, if recognized, would affect the Company's effective tax rate.

There are currently no federal or state audits in progress. Tax years still subject to examination for Federal and the State authorities include all prior years due to the existence of net operating loss carry-forwards.

It is the Company's practice to recognize interest and penalties related to income tax matters in income tax expense. As of December 31, 2018, the Company does not have any accrued interest or penalties related to uncertain tax positions.

9. Commitments and Contingencies

The Company has a lease for its corporate headquarters which expires on June 30, 2019. The lease is for a total of 5,275 square feet of office space located in South San Francisco, California. Rental expense for each of the years ended December 31, 2018 and 2017 was $208,000. The future minimum lease payments required under the lease are as follows:

	Amount (in thousands)
2019	112
Total lease obligations	**$ 112**

10. Retirement Savings Plan

The Company sponsors a savings plan available to all employees, which qualifies under Section 401(k) of the Internal Revenue Code. Employees may contribute from 1% to 99% of their pre-tax salary to the plan, subject to statutory limitations. The Company is able to match participant contributions, although to date the Company has not provided any matching payments to participants.

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

1. Form S-8 Nos. 333-126636, 333-177628, 333-181810 and 333-190409 pertaining to the Mateon Therapeutics, Inc. 2005 Stock Plan, as amended,
2. Form S-8 No. 333-159585 pertaining to the Mateon Therapeutics, Inc. 2005 Stock Plan and the Mateon Therapeutics, Inc. 2009 Employee Stock Purchase Plan,
3. Form S-8 No. 333-226-832 and 333-204500 pertaining to the Mateon Therapeutics, Inc. 2015 Equity Incentive Plan, and
4. Form S-1 No. 333-225600 pertaining to the resale of shares issued in a 2018 private placement transaction,

of our report dated April 10, 2019 (which report expresses an unqualified opinion and includes an explanatory paragraph expressing substantial doubt about the Company's ability to continue as a going concern), with respect to the financial statements of Mateon Therapeutics, Inc., included in this Annual Report (Form 10-K) for the year ended December 31, 2018.

/s/ OUM & CO. LLP

San Francisco, California
April 10, 2019

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO RULE 13A-14(A) AND 15D-14(A)

I, William D. Schwieterman, certify that:

1. I have reviewed this annual report on Form 10-K of Mateon Therapeutics, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 10, 2019

By: /s/ WILLIAM D. SCHWIETERMAN
William D. Schwieterman
President and
Chief Executive Officer

Exhibit 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO RULE 13A-14(A) AND 15D-14(A)

I, Matthew M. Loar, certify that:

1. I have reviewed this annual report on Form 10-K of Mateon Therapeutics, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 10, 2019

By: /s/ MATTHEW M. LOAR
Matthew M. Loar
Chief Financial Officer

Exhibit 32.1

Certification
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
(Subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code)

Pursuant to section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of section 1350, chapter 63 of title 18, United States Code), each of the undersigned officers of Mateon Therapeutics, Inc., a Delaware corporation (the "Company"), does hereby certify, to such officer's knowledge, that:

The Annual Report for the year ended December 31, 2018 (the "Form 10-K") of the Company fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: April 10, 2019 /s/ WILLIAM D. SCHWIETERMAN
William D. Schwieterman, President and Chief Executive Officer

Date: April 10, 2019 /s/ MATTHEW M. LOAR
Matthew M. Loar, Chief Financial Officer