Actinium Pharmaceuticals, Inc.
Form 10-K
March 16, 2018

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

Annual Report Under Section 13 Or 15(d) Of The Securities Exchange Act Of 1934

For the fiscal year ended **December 31, 2017**

or

Transition Report Under Section 13 Or 15(d) Of The Securities Exchange Act Of 1934

For the transition period from _____to _____

COMMISSION FILE NUMBER: 000-52446

ACTINIUM PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware	**74-2963609**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

275 Madison Avenue, 7th Fl.

New York, NY 10016

(Address of principal executive offices) (Zip Code)

(646) 677-3870

Registrant's telephone number, including area code

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

Title of each class	**Name of exchange on which registered**
Common stock, par value $0.001	**NYSE American**

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

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

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the 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 and posted on its corporate website, if any, every Interactive Date File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (Section 232.405 of the chapter) during the preceding 12 months (or for such shorter period that the registrant was required to

submit and post such files). Yes No

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

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

Large accelerated filer		Accelerated filer
Non-accelerated filer	(Do not check if a smaller reporting company)	Smaller reporting company
		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 126-2 of the act): Yes No

The aggregate market value of voting stock held by nonaffiliates of the registrant as of June 30, 2017, the last business day of the registrant's most recently completed second fiscal quarter, based on the closing price of the common stock on the NYSE AMERICAN on June 30, 2017 was $71,393,269.

As of March 16, 2018, 110,198,660 shares of common stock, $0.001 par value per share, were outstanding.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K (this "Report") contains forward looking statements that involve risks and uncertainties, principally in the sections entitled "Description of Business," "Risk Factors," and "Management's Discussion and Analysis of Financial Condition and Results of Operations." All statements other than statements of historical fact contained in this prospectus, including statements regarding future events, our future financial performance, business strategy and plans and objectives of management for future operations, are forward-looking statements. We have attempted to identify forward-looking statements by terminology including "anticipates," "believes," "can," "continue," "could" "estimates," "expects," "intends," "may," "plans," "potential," "predicts," "should," or "will" or the negative of these terms or comparable terminology. Although we do not make forward looking statements unless we believe we have a reasonable basis for doing so, we cannot guarantee their accuracy. These statements are only predictions and involve known and unknown risks, uncertainties and other factors, including the risks outlined under "Risk Factors" or elsewhere in this prospectus, which may cause our or our industry's actual results, levels of activity, performance or achievements expressed or implied by these forward-looking statements. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time and it is not possible for us to predict all risk factors, nor can we address the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause our actual results to differ materially from those contained in any forward-looking statements. All forward-looking statements included in this document are based on information available to us on the date hereof, and we assume no obligation to update any such forward-looking statements.

You should not place undue reliance on any forward-looking statement, each of which applies only as of the date of this prospectus. Before you invest in our securities, you should be aware that the occurrence of the events described in the section entitled "Risk Factors" and elsewhere in this prospectus could negatively affect our business, operating results, financial condition and stock price. Except as required by law, we undertake no obligation to update or revise publicly any of the forward-looking statements after the date of this prospectus to conform our statements to actual results or changed expectations.

PART I

Item 1. Business.

Business Overview

Actinium Pharmaceuticals Inc. is a clinical-stage biopharmaceutical company focused on developing and potentially commercializing targeted therapies for improved myeloablation and conditioning of the bone marrow prior to a bone marrow transplant and for the targeting and killing of cancer cells. Our targeted therapies are Antibody Radio-Conjugates, or ARC, that combine the targeting ability of monoclonal antibodies ("mAb") with the cell-killing ability of radioisotopes. Our ARC's have demonstrated the ability to improve access to bone marrow transplants with the potential for better outcomes, namely increased marrow engraftment and survival. Our product pipeline consists of two ARC product candidates that are currently being studied in three clinical trials. Two additional clinical trials are expected to begin patient enrollment in 2018. In each of the indications, we believe our product candidates are either first-in-class or have best–in-class potential. Our lead myeloablation product candidate, Iomab-B, is currently being studied in a pivotal Phase 3 trial as a conditioning agent in older patients with relapsed or refractory ("r/r") Acute Myeloid Leukemia AML ("AML") who are ineligible for a bone marrow transplant as they cannot withstand chemotherapy-based conditioning. Iomab-B is an ARC that is comprised of the anti-CD45 mAb apamistamab and the radioisotope iodine-131 (^{131}I"). Our CD33 program trials include; the ongoing Phase 2 Actimab-A trial for patients newly diagnosed with AML over the age of 60, the Phase 1 Actimab-M trial for patients with refractory multiple myeloma, the planned Phase 2 Actimab-MDS trial for patients with high-risk myelodysplastic syndrome ("MDS") with a p53 genetic mutation and the Phase 1 Actimab-A & CLAG-M trial for patients with r/r AML. These trials are studying our ARC drug candidate comprised of the anti-CD33 mAb lintuzumab and the radioisotope actinium-225 (^{225}Ac"). In addition, we are developing our Actinium Warhead Enabling, or AWE, Technology Platform. We plan to leverage our intellectual property and know-how to create additional ARC drug candidates by labeling ^{225}Ac to targeting moieties that we will either progress in clinical trials or out-license.

Bone marrow is semi-solid tissue found within the spongy section of bones that produces new blood cells in a process called hematopoiesis. Bone marrow contains hematopoietic stem cells that give rise to the three classes of blood cells that are found in circulation: red blood cells and platelets that are responsible for blood function and white blood cells that are responsible for immune system function. A bone marrow transplant may be the only potentially curative treatment option, or the best treatment option, for patients with blood cancers such as leukemias, lymphomas and multiple myeloma, or benign blood, or marrow disorders such as inherited immune system disorders, sickle cell disease and severe aplastic anemia.

In order to receive a bone marrow transplant, ("BMT"), patients are administered treatment to ablate or destroy their bone marrow in a process referred to as myeloablation. Myeloablative treatments typically consist of chemotherapy

and external radiation, which is also called total body radiation. As an alternative to myeloablation, the bone marrow may also be conditioned or prepared for a transplant via lower intensity treatment know as reduced intensity conditioning, which uses lower doses of external radiation and less toxic types of chemotherapy. Patients with blood cancers must ideally be disease–free, or at least in remission, before receiving myeloablative or conditioning therapy. Myeloablative treatments are associated with greater and more severe toxicities, including higher treatment-related mortality rates that may be too intense for patients, particularly those of advanced age, to tolerate as compared to reduced intensity conditioning. Reduced intensity conditioning is generally better tolerated by patients but is associated with higher rates of relapse, which can reduce overall survival. Our ARC based approach is designed to target blood cancer and bone marrow cells via a mAb and deliver potent radioisotope payloads directly to those cells to achieve myeloablation without systemic toxicities. In doing so, we hope to improve access to BMT for a greater number of patients while improving outcomes through improved myeloablation via our ARC technologies.

We have licensed our product candidates and ARC technologies from the Fred Hutchinson Cancer Research Center and the Memorial Sloan Kettering Cancer Center. These licenses include rights to certain patents and we own outright patents pertaining to our product candidates and AWE technology platform. Our intellectual property portfolio consists of 68 issued and pending patent applications that we have licensed or fully own. We have compiled scientific and medical advisory boards of thought-leading physicians in their respective fields to advise and guide us though the development process of our pipeline product candidates.

We have also developed proprietary know-how related to the development, manufacturing and supply chain required for our product candidates. We supply our product candidates to clinical trial sites on a just-in-time basis through the manufacturing of our drug product components, final drug product and the distribution of our final drug product to medical centers where our trials are conducted. In the case of Iomab-B, we calculate, produce and supply personalized doses for our clinical trial. We have secured access to ^{131}I produced by two premier commercial global suppliers. We project that these two suppliers have sufficient ^{131}I production capacity to meet our commercial needs for the Iomab-B program. We have secured access to ^{225}Ac through a renewable contractual arrangement with the United States Department of Energy, or DOE. We project that these quantities are sufficient to support early stages of commercialization of actinium isotope-based products and that the DOE's accelerator route of production of ^{225}Ac has the potential to provide commercial quantities of ^{225}Ac. We have also developed our own proprietary process for industrial-scale ^{225}Ac production in a cyclotron in quantities adequate to support full product commercialization.

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Pipeline

Myeloablation Product Candidates

We are developing two first-in-class product candidates focused on improving access to and outcomes from bone marrow transplant through improved myeloablation. Our ARC product candidates target antigens that are expressed on certain cancer cell types with mAbs that are labeled with radioisotopes that are able to destroy cellular DNA and kill these cells with the energy that they emit. We utilize certain mAbs and radioisotopes to develop product candidates that are ideally suited for particular disease indications and patient populations. Our lead myeloablation product candidate is Iomab-B, an ARC consisting of an anti-CD45 mAb and the radioisotope iodine-131, or ^{131}I. We are also developing an ARC consisting of the anti-CD33 mAb lintuzumab and the radioisotope actinium-225, or ^{225}Ac, in a study that we call Actimab-MDS.

CD33 Program Trials

CD33 is an antigen that has been found to be expressed in patients with certain hematologic malignancies including AML, MDS and multiple myeloma. CD33 is expressed in up to 90% of patients with AML, approximately 75% of patients with MDS and 25-35% of patients with multiple myeloma. We are developing our lintuzumab-^{225}Ac ARC for these indications in the following clinical trials:

- Actimab-A phase 2 clinical trial for patients with AML
- Actimab-M phase 1 clinical trial for patients with multiple myeloma which is first in class and
- Actimab-A phase 1 clinical trial in combination with CLAG-M, a salvage chemotherapy regimen, in patients with r/r AML.

We intend to develop our best-in-class CD33 program to address a broad population of patients with CD33 expressing hematologic indications and deliver the best outcomes using our ARC technological approach.

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Actinium Warhead Enabling (AWE) Technology Platform and Program

Our proprietary AWE Technology Platform is supported by intellectual property and know-how that enables the creation of ^{225}Ac radio-conjugates, wherein a biomolecular targeting agent is labeled with the ^{225}Ac payload to enhance targeted cell killing. As of March 2018, we have four issued and one pending patent related to our AWE Technology Platform in the U.S. having expirations in 2021, 2030 and 2023 and 21 issued or pending patents outside of the U.S. Our intellectual property covers the use of the "gold standard" chelator DOTA, (tetracarboxylic acid), an organic compound used to attach, or conjugate, radioisotopes to monoclonal antibodies and any conceivable derivative thereof. Additionally, we hold intellectual property protection around methods of chelation or labeling of the targeting agent with ^{225}Ac as well as newer next generation methods of chelation or labeling. We are studying our AWE Technology Platform in preclinical studies to demonstrate proof of concept to enable research collaborations and partnerships.

Business Strategy

We intend to potentially develop Iomab-B and other potential myeloablation products through registration studies and approval. If our efforts are successful, we may elect to commercialize our myeloablation products on our own, or with a partner in the United States and out-license the rights to develop and commercialize the product to a strategic partner outside of the United States. If we commercialize our products independently, we intend to build a commercial distribution network that can supply our myeloablation product candidates to the top 50-100 bone marrow transplant centers in the U.S., where a majority of patients are myeloablated and receive their transplants. In the case of our CD33 program product candidates, we will potentially develop these up to and including a Phase 2 proof-of-concept human clinical trial (a trial designed to provide data on the drug's efficacy). We will most likely seek to enter into strategic partnerships whereby the strategic partner(s) co-fund(s) further human clinical trials of the drug that are needed to obtain regulatory approvals for commercial sale within and outside of the United States. In parallel, we intend to identify and begin initial proof-of-concept trials with our AWE Technology Platform in other cancer indications. We intend to retain marketing rights for our products in the United States whenever possible and out-license marketing rights to our partners for the rest of the world. We may also seek to in license other applicable opportunities should such technology become available.

Market Opportunity

We believe that improved myeloablation prior to a BMT could result in improved access and outcomes for patients, as well as provide a pharmacoeconomic benefit. The Center for International Blood and Marrow Transplant Research (CIBMTR) estimates that there approximately 22,000 patients received an autologous or allogeneic BMT's in the United States in 2015. The American Cancer Society estimates that approximately 172,000 patients will be diagnosed with leukemia, lymphoma or multiple myeloma and that approximately 1.2 million patients are living with, or are in

remission from these diseases. A BMT is a potentially curative or potentially best treatment option for certain patients with these blood cancers and we intend to develop our ARC product candidates with the goal of improving BMT access and outcomes for these patients. According to a study published in the Journal of Medical Economics, real-world economic burden of hematopoietic cell transplantation among a large US commercially insured population with hematologic malignancies, the healthcare cost for patients receiving an autologous BMT were $390,000 while the healthcare costs for patients receiving an allogeneic BMT were $745,000. We believe that reduction in toxicities and resulting hospital stays associated with current chemotherapy-based myeloablation regimens could reduce these costs. We intend to collect pharmacoeconomic data in our current and future clinical trials for Iomab-B and other myeloablation product candidates to determine if our therapies lead to a cost benefit. Iomab-B has demonstrated efficacy in myeloablation prior to a BMT for blood cancer indications, including AML, MDS, ALL, Hodgkin's Lymphoma, NHL and multiple myeloma. These are indications for which Iomab-B can be developed and it is our intention to explore these opportunities. We believe the aggregate worldwide market potential for the treatment of AML, MDS, ALL, Hodgkin's Lymphoma, NHL and multiple myeloma is approximately $6.6 billion.

For our CD33 program drug candidates, we are competing in the marketplace for cancer treatments estimated to have reached over $83 billion in 2016 sales, according to "The Global Use of Medicines: Outlook Through 2016 Report by the IMS Institute for Healthcare Informatics, July 2012". While surgery, radiation and chemotherapy remain staple treatments for cancer, their use is limited by the fact that they often cause substantial damage to normal cells. On the other hand, targeted monoclonal antibody therapies exert most or all of their effect directly on cancer cells, but often lack sufficient killing power to eradicate all cancer cells with just the antibody. A new approach for treating cancer is to combine the precision of antibody-based targeting agents with the killing power of radiation, or chemotherapy, by attaching powerful killing agents to precise molecular carriers called monoclonal antibodies. We use mAbs labeled with radioisotopes to deliver potent doses of radiation directly to cancer cells while sparing healthy tissues. The radioisotopes we use are the alpha emitter ^{225}Ac and the beta emitter 131-I. 131-I is among the best known and well characterized radioisotopes. It is used very successfully in treatment of papillary and follicular thyroid cancer as well as other thyroid conditions. It is also attached to a monoclonal antibody in treatment of NHL. It is also used experimentally with different carriers in other cancers. ^{225}Ac has many unique properties and we believe we are a leader in developing this alpha emitter for clinical applications using our proprietary AWE technology platform.

Our executive office is located at 275 Madison Ave, 7th Floor, New York, NY 10016 and telephone number is (646) 677-3870. Our website address is http://www.actiniumpharma.com. Except as set forth below, the information on our website is not part of this Annual Report on Form 10-K.

Clinical Trials

Myeloablation Product Candidates

We are focused on developing ARC product candidates that improve bone marrow transplant access and outcomes through improved myeloablation. Myeloablation is an integral step prior to a bone cell transplant whereby a patient's bone marrow is ablated to make room for stem cells from a donor. A stem cell transplant may be the only potentially curative treatment option or the best treatment option for patients with blood cancers such as leukemias, lymphomas and multiple myeloma or benign blood or marrow disorders such as inherited immune system disorders, sickle cell disease and severe aplastic anemia. We are currently conducting two clinical trials for product candidates focused on myeloablation, a pivotal phase 3 trial for Iomab-B and the phase 2 Actimab-MDS trial both of which are first in their class

Iomab-B Pivotal Phase 3 Trial

Iomab-B is our lead product candidate currently in a pivotal phase 3 multicenter clinical trial. We licensed Iomab-B from the Fred Hutchinson Cancer Research Center, or FHCRC, where it was developed and studied extensively in numerous clinical trials in a range of hematologic indications and patient populations. Iomab-B consists of the monoclonal antibody apamistamab and the beta emitting radioisotope ^{131}I. Apamistamab has been studied in 10 Phase 1 or Phase 2 clinical trials in patients with AML, MDS, ALL, multiple myeloma and lymphomas at various stages of the disease such as newly diagnosed, relapsed or refractory and first remission. There are additional investigator-initiated trials ongoing at FHCRC. The indication selected for our pivotal phase 3 trial is myeloablation and bone marrow conditioning for HSCT in patients with relapsed and refractory AML over the age of 55.

Previous Iomab-B clinical trials leading to our current pivotal Phase 3 trial included:

Indications	**N**	**Key Findings**
AML, MDS, ALL (adult)	34	–7/34 patients with median disease-free state ("DFS") of 17 years.

		–18/34 patients in remission at day 80
AML >1st remission (adult)	23	–15/23 in remission at day 28
AML 1st remission (age 16-50)	43	–23/43 DFS from 5-16 years –30/43 in remission at day 28 –33/43 in remission at day 80
High-risk MDS, advanced AML (age 50+)	68 in dose escalation study 31 treated at MTD	–CR (complete remission) in virtually all patients –1-year survival ~40% for all patients –1-year survival ~45% for patients treated at MTD (“maximum tolerated dose”)
High-risk MDS, AML (age 18–50)	14 in dose escalation	All patients achieved full donor chimerism by day 28 post-transplant
High-risk MDS, AML –haploidentical donors (adult)	8 in dose escalation	–6/8 treated patients achieved CR by day.28 –8/8 patients 100% donor chimerism by day28

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Ongoing clinical trials using the apamistamab antibody include:

Indications	**Phase**
AML, ALL and high-risk MDS	Phase 1/2

Actimab-MDS Phase 2 Trial

In December 2017, we announced Actimab-MDS, a planned phase 2 trial for our second ARC product candidate focused on improved myeloablation. Actimab-MDS consists of the anti-CD33 mAb lintuzumab labeled with the radioisotope ^{225}Ac. The planned Actimab-MDS phase 2 will be conducted with the MDS Clinical Research Consortium that is comprised of the Cleveland Clinical Taussig Cancer Institute, Dana-Farber Cancer Institute, MD Anderson Cancer Center, H. Lee Moffitt Cancer Center and Research Institute, Weill Medical College of Cornell University and the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins. Dr. Gail Roboz, Director, Leukemia Program and Professor of Medicine at Weill Medical College of Cornell University will serve as principal investigator for the trial.

The Actimab-MDS trial will enroll patients with high-risk MDS that have a p53 genetic mutation, which is estimated to occur in approximately 20% of MDS patients. Patients with a p53 mutation have been found to have poorer survival outcomes following a bone marrow transplant. We expect to meet with the U.S. Food & Drug Administration, or FDA, in the first half of 2018 to discuss the regulatory pathway for this product candidate. Currently, we expect to conduct a 50-80 patient, single arm, phase 2 trial. Patients enrolled in the trial will receive a single infusion of lintuzumab labeled with ^{225}Ac at a dose of 4.0 μCi/kg prior to receiving a bone marrow transplant. We expect that overall survival will be the primary endpoint of the study measured at either one or two years.

CD33 Program Trials

We are developing our ARC product candidate that consists of the anti-CD33 mAb lintuzumab and the radioisotope ^{225}Ac for multiple hematologic malignancies. CD33 is an antigen shown to be expressed in up to 90% of patients with AML, 75% of patients with MDS and 35% of patients with multiple myeloma. Our lintzumab-^{225}Ac ARC is a second-generation construct that was developed at the Memorial Sloan Kettering Cancer Center, or MSKCC. The first-generation product consisted of the same monoclonal antibody lintuzumab but utilized the radioisotope bismuth-213 (“213Bi”), a daughter of ^{225}Ac.

In preclinical animal models, doses in the nanocurie range prolonged survival. In humans, Actimab-A was previously studied in a Phase 1 monotherapy trial of relapsed or refractory AML patients at MSKCC. Dose levels in that study re-confirmed the substantially higher potency of ^{225}Ac -lintuzumab, as compared to equivalent dosing of the first-generation 213Bi-lintuzumab construct, which had nevertheless established safety and efficacy in a Phase 1/2 trial in high-risk AML with cytoreduction.

High potency means that a relatively low amount of drug is needed to produce a given effect. In preclinical and Phase 1 clinical studies, ^{225}Ac -lintuzumab has demonstrated at least 500-1000 times higher potency than the first-generation predecessor 213Bi-lintuzumab upon which it is based. This difference is due to intrinsic physicochemical properties of ^{225}Ac -lintuzumab that were first established in vitro, in which ^{225}Ac -lintuzumab killed multiple cell lines at doses at least 1000 times lower (based on LD50 values) than 213Bi-lintuzumab analogs. Key factors in ^{225}Ac -lintuzumab's higher potency are the yield of 4 alpha-emitting isotopes per ^{225}Ac (compared to 1 alpha decay for bismuth 213) and much longer half-life (10 day for ^{225}Ac vs 46 minutes for 213Bi).

Collectively, these two constructs have been studied in over 100 patients including the following trials:

- Phase 1 clinical trial with Bismab-A, the first-generation product consisting of the same monoclonal antibody Lintuzumab and ^{213}Bi alpha emitter, a daughter of ^{225}Ac;
- Phase 1/2 clinical trial with Bismab-A, the first-generation product consisting of the same monoclonal antibody Lintuzumab and ^{213}Bi alpha emitter, a daughter of ^{225}Ac; and
- Dose escalating pilot Phase 1 clinical trial with Actimab-A, the current product consisting of the Lintuzumab monoclonal antibody and ^{225}Ac -alpha emitter.

Completed Actimab-A related clinical trials outcomes:

- The Phase 2 arm of the Bismab-A drug study has shown signs of the drug's efficacy and safety, including reduction in peripheral blast counts and complete responses in some patients. ^{213}Bi is a daughter, i.e., product of the degradation of ^{225}Ac, with cancer cell killing properties similar to ^{225}Ac but is less potent. The Phase 1 Actimab-A trial at MSKCC with a single-dose administration of Actimab-A showed elimination of leukemia cells from blood in 67% of all evaluable patients who received a full dose and in 83% of those treated at dose levels above 0.5 microcuries per kilogram (μCi/kg), and eradication of leukemia cells in both blood and bone marrow in 20% of all evaluable patients and 25% of those treated at dose levels above 0.5 μCi/kg. Maximum tolerated single dose in this trial was established at 3 μCi/kg.

- The Phase 1 portion of the trial with lintuzumab ^{225}Ac at fractionated doses was a dose-finding study. The results of the study showed that 28% (5 of 18) of patients had objective responses (2CR, 1CRp and 2 Cri (complete remission with incomplete blood count recovery) with median response duration of 9.1 months. Mean bone marrow blast reduction amongst evaluable patients (14 of 18) was 67% with 57% of patients having bone marrow blast reduction of 50% or greater and 79% (11 of 14) of patients having bone marrow blast reductions after one cycle of therapy. Maximum tolerated dose was not reached in this trial. We elected to progress to the Phase 2 portion of the trial at 2.0 μCi/kg/fraction, the highest dose level from the Phase 1 portion of the trial.

Sources: Jurcic JG. Targeted Alpha-Particle Immunotherapy with Bismuth-213 and Actinium-225 for Acute Myeloid Leukemia. J. Postgrad Med Edu Res 2013, 47(1):14-17; ; JG Jurcic et al, Phase 1 Trial of the Targeted Alpha- Particle Nano-Generator Actinium-225 (225Ac)-Lintuzumab in Acute Myeloid Leukemia (AML) J Clin Oncol 29:2011 (suppl, abstr 6516); McDevitt MR et al, "Tumor Therapy with Targeted Atomic Nanogenerators" Science 2001, 294:1537—1540; Rosenblat TL et al, "Sequential cytarabine and alpha-particle immunotherapy with bismuth-213-lintuzumab (HuM195) for acute myeloid leukemia" Clin Cancer Res. 2010, 16(21):5303-5311; Jurcic JG et al. "Phase I Trial of the Targeted Alpha-Particle Nano-Generator Actinium-225 (225Ac)-Lintuzumab in Acute Myeloid Leukemia (AML)" Blood (ASH Meeting Abstracts) 2012.

Ongoing Actimab-A Phase 2 trial:

Our most advanced CD33 program trial is a Phase 2 clinical trial in patients newly diagnosed with AML who are over the age of 60 and unfit for intensive chemotherapy. The Phase 2 portion of the trial will enroll 53 patients and studies Actimab-A as a monotherapy. We received agreement from the FDA for multiple revisions to the trial protocol for the Phase 2 portion of the trial that include:

- Removing the use of low dose cytarabine from the Phase 2 protocol,
- Stipulating peripheral blast burden as an inclusion criteria with 200 ML being the threshold
- Mandating the use of hydroxyurea in patients with peripheral blast count above 200 ML to lower their peripheral blasts below 200ML/ prior to Actimab-A administration
- Mandating the use of granulocyte colony-stimulating factor (GCSF) support

At the American Society of Hematology, or ASH, annual meeting in December 2017, we presented via poster, preliminary results from the ongoing phase 2 clinical trial. This trial is enrolling patients newly diagnosed with AML who are over the age of 60 that are unfit for intense chemotherapy. This trial allows patients with prior hematologic disease to enroll and 69% of patients (9 of 13) had antecedent hematologic disease (5 MDS, 2 CMML, 1 Atypical CML, 1 tAML) and 7 of these patients were previously treated with hypomethylating agents. We reported a 69% objective response in evaluable patients (9 of 13) (3 CRp and 6 CRi), and our target response rate for this trial was 35%. We also reported a 98% median reduction in bone marrow blasts (10 of 13). Minimal extramedullary toxicities were observed in this patient population. Myelosuppression was observed in all patients and determined to be longer in duration than desirable in unfit patients who by definition are medically infirm. As a result, the dose level was reduced from 2.0 μCi/kg to 1.5 μCi/kg on Days 1 and 8.

Actimab-M Phase 1 Trial

Actimab-M is comprised of the anti-CD33 monoclonal antibody lintuzumab coupled to ^{225}Ac and is the same construct, which is currently being studied in a Phase 2 Actimab-A clinical trial in patients newly diagnosed with AML who are over the age of 60. The Phase 1 Actimab-M trial is an open label, dose-escalation study. Patients will be administered a starting dose level of 0.5 μCi/Kg via infusion on day 1 of each cycle for up to 8 cycles with each cycle lasting 42 days. If this dose level is deemed safe, a second dose level of 1.0 μCi/kg will be explored for up to 4 cycles, also of 42 days per cycle. Total dose received per patient is not to exceed 4.0 μCi/kg. In the event of dose limiting toxicities (DLTs) at the 0.5 μCi/Kg dose level, a dose level of 0.25 μCi/Kg will be explored. The Phase 1 trial will estimate maximum tolerated dose (MTD), assess adverse events, measure response rates (objective response rate, complete response rate, stringent complete response rate, very good partial response rate and partial response rate) as well as progression free survival (PFS) and overall survival (OS). To our knowledge, we are the only company developing a multi-disease CD33 targeting program and the first company to develop a CD33 targeting product candidate for patients with multiple myeloma.

Actimab-A and CLAG-M Phase 1 Trial

In February 2018, we announced that the Medical College of Wisconsin would be starting an investigator-initiated Phase 1 trial studying our lintuzumab-^{225}Ac ARC in combination with CLAG-M, a salvage chemotherapy regimen. CLAG-M consists of Cladribine, Cytarabine, G-CSF and Mitoxantrone that is administered to patients over five consecutive days. This Phase 1 trial will add a single infusion of Actimab-A to CLAG-M that will be administered on day 7. This is a dose-finding study that will explore Actimab-A at dose levels of 0.25 uCi/kg, 0.50 uCi/kg and 0.75 uCi/kg that will assess safety by monitoring DLT's. In addition, efficacy will be assessed by remission rates (CR, CRp, and CRi), rate of patients receiving a bone marrow transplant, overall survival at 1 year and progression free survival ("PFS").

Actinium Warhead Enabling (AWE) Technology Platform and Program

Our proprietary AWE Technology Platform is supported by intellectual property and know-how that enables the creation of ^{225}Ac radio conjugates wherein a biomolecular targeting agent is labeled with the ^{225}Ac payload to enhance targeted cell killing. As of March 2018, we have four issued and one pending patent related to our AWE Technology Platform in the U.S. having expirations in 2021, 2030 and 2023 and 21 issued or pending patents outside of the U.S The intellectual property covers the use of the "gold standard" chelator DOTA, (tetracarboxylic acid), an organic compound used to attach, or conjugate, radioisotopes to monoclonal antibodies and any conceivable derivative thereof. Additionally, we hold intellectual property protection around methods of chelation or labeling of the targeting agent with ^{225}Ac as well as newer next-generation methods of chelation or labeling.

In November 2017 we announced the availability of our proprietary AWE Technology Platform via the AWE Program for partnerships and collaborations. In tandem, we demonstrated the AWE Technology Platform at the ASH 2017 Annual Meeting with the targeting agent daratumumab - an asset that is distinct from the Company's AWE-generated, clinical-stage lintuzumab-^{225}Ac. Daratumumab is an anti-CD38 antibody which is marketed by Johnson & Johnson (JNJ) under the trade name Darzalex® for the treatment of multiple myeloma. We first demonstrated the adaptability of the AWE Technology Platform by successfully labeling daratumumab with ^{225}Ac. Importantly, the ability of the ^{225}Ac enabled daratumumab to engage with its target was unhindered compared to the naked daratumumab. The stability of the constructs was tested to assure reliable labeling. The impact of ^{225}Ac-daratumumab was then compared to that of the naked antibody in three cells lines with varying expression levels of the CD38 target. Treatment of these cell lines with ^{225}Ac-daratumumab demonstrated both a time and concentration-dependence and, in every instance the ^{225}Ac-enabled daratumumab demonstrated superior cell killing over its unlabeled counterpart. As an additional control and to demonstrate the specificity of the cell killing, a cell line that did not express the intended CD38 target was treated with both ^{225}Ac-daratumumab and daratumumab. In this scenario no cell killing was observed for both the treatment groups, supporting that cell killing observed with the ^{225}Ac-daratumumab is specific and that there are no off-target effects from the radioisotope. Following this initial promising validation, further pre-clinical development of the ^{225}Ac-daratumumab asset has been pursued, wherein the value of the ^{225}Ac-daratumumab was assessed *in vivo* in xenograft mouse models.

We have led and successfully demonstrated the adaptability and robust labeling that can be achieved with the AWE Platform Technology. Moreover, the AWE Program provides a potential partner with access to the know-how, capabilities and facilities to execute on a validation study for an ^{225}Ac enabled radio conjugate in addition to access to the AWE Platform Technology. The studies with ^{225}Ac-daratumumab provides an example of the enhanced therapeutic effect that can be achieved from the utilization of our core platform technology to enable an asset with ^{225}Ac positioning the generation of actinium radio conjugates as a viable therapeutic approach.

Operations

Our current operations are primarily focused on furthering the development of our clinical drug candidates for myeloablation, our CD33 program drug candidates, supporting investigator-initiated clinical trials that use our drug candidates and leveraging our AWE platform to create new clinical programs and contribute to collaborations.

Operations related to Iomab-B include progressing the ongoing multi-center Phase 3 pivotal trial (a trial that leads to registration trial marketing approved by the FDA), which includes investigator engagement, site activation and supporting patient enrollment. In addition, we are focused on commercial-scale manufacturing of apamistamab suitable for an approval trial and preparation of appropriate regulatory submissions. We are also focused on producing final Iomab-B drug product material that consists of apamistamab labelled with the isotope ^{131}I. We have secured access to ^{131}I produced by two premier commercial global suppliers. We project that these two suppliers have sufficient ^{131}I production capacity to meet our commercial needs for the Iomab-B program. We are aware of other global suppliers of ^{131}I with whom we believe we can secure commercial supply agreement if necessary. Operations related to our planned Phase 2 Actimab-MDS trial include preparation for appropriate regulatory submissions, protocol development and investigator engagement.

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In the case of our CD33 program, key ongoing activities include progressing the multi-center Phase 2 Actimab-A trial, the Phase 1 Actimab-M trial and planned Phase 1 Actimab-A and CLAG-M combination trial, managing isotope and other materials supply chain and managing the manufacturing of the finished drug candidate product. We have secured access to ^{225}Ac through a renewable contractual arrangement with the United States Department of Energy, or DOE. We project that these quantities are sufficient to support early stages of commercialization of actinium isotope-based products and that the DOE's accelerator route of production of ^{225}Ac has the potential to provide commercial quantities of ^{225}Ac. We have also developed our own proprietary process for industrial-scale ^{225}Ac production in a cyclotron in quantities adequate to support full product commercialization. In addition, we are aware of numerous sources from which we may secure additional quantities of the ^{225}Ac isotope.

Intellectual Property Portfolio and Regulatory Protections

Intellectual Property

We have developed or in-licensed numerous patents and patent applications and possess substantial know-how and trade secrets related to the development and manufacture of our products. As of March 2018, our patent portfolio includes: 68 issued and pending patent applications, of which 11 are issued in the United States, 4 are pending in the United States, and 53 are issued internationally and pending internationally. Additionally, several non-provisional patent applications are expected to be filed in 2018 based on provisional patent applications filed in 2017. This is part of an ongoing strategy to strengthen our intellectual property position. About one quarter of our patents are in-licensed from third parties and the remainder are Actinium-owned. These patents cover key areas of our business, including use of the actinium-225 and other alpha emitting isotopes attached to cancer specific carriers like monoclonal antibodies, methods for manufacturing key components of our product candidates including actinium-225, the alpha emitting radioisotope and carrier antibodies, and methods for manufacturing finished product candidates for use in cancer treatment.

We have licensed the rights to two issued patents in the area of drug preparation for methods of making humanized antibodies for our product Actimab-A that will expire in 2018 and 2019, respectively. We own five issued patents including one divisional patent in the United States and 32 patents outside of the United States, including one divisional patent related to the manufacturing of actinium in a cyclotron that will expire in 2027. We own or have licensed the rights to three issued patents in the United States and 14 patents outside of the United States related to the generation of radioimmunoconjugates that will expire in 2021, 2030 and 2032 respectively. We own or have licensed the rights to use one issued patent, one pending patent and two provisional patents for methods of treatment with our product Actimab-A that will expire in 2019. For Iomab-B we own one pending patent for anti-CD45 immunoglobulin composition and one pending patent the administration of a conjugated antibody.

A patent whose claims address methods of treating hematopoietic malignancies with Iomab-B is pending; still, we have developed a proprietary strategy based on trade secret protection and the potential for orphan drug and data exclusivities. The BC8 antibody, cell line and related know-how has been exclusively licensed by us from FHCRC in exchange for milestone payments, royalties and research support.

Patents related to the lintuzumab antibody component of our CD33 product candidates have been exclusively licensed by us from AbbVie Biotherapeutics Corp. for use with alpha-emitting radioisotopes in exchange for future development and commercialization milestones, a royalty on net sales for a period of 12.5 years from first commercial sale, a negotiation right to be our clinical and/or commercial antibody supplier, a negotiation right to co-promote Actimab-A in the United States on terms to be negotiated, and the grant-back of intellectual property (IP) rights covering improvements to the antibody for use other than with an alpha-emitting isotope. Patents covering actinium-225 conjugated to antibodies have been exclusively licensed by us from MSKCC in exchange for license fees, research support payments, development milestone payments, and royalties on net sales for the term of the licensed patents or, if later, 10 years from first commercial sale, or of any sublicense income we may receive. We source ^{225}Ac under an agreement with the Oak Ridge National Laboratory that expires at the end of 2018. We believe that we will be able to renew this contract for additional annual periods, as we have since 2009.

Regulatory Protections

The indications for which we are developing our product candidates for are orphan drug designations, which are disease indications that affect fewer than 200,000 patients in the United States and less than 5 in 10,000 patients in the European Union (“EU”). We have received orphan drug designation for Iomab-B and our lintuzumab-CD33 ARC for patients with AML in both the United States and the EU. As a result, if our products are to be approved they may receive 7 years and 10 years of market exclusivity in the US and EU, respectively. In addition, our product candidates are biologics combined with radioisotopes. The Hatch-Waxman Act requires that a manufacturer of generic drugs, for which a biologic drug is called a biosimilar, requires that the manufacturer demonstrate bioequivalence. We believe that due to the nature of radioisotopes having half-lives combined with the complexities of biologic drugs would make it difficult for a manufacturer to demonstrate bioequivalence of our product candidates.

Competition Overview

In the field of bone marrow transplantation, pharmaceuticals currently used for bone marrow ablation/conditioning are generic drugs and to our knowledge there are no significant industry efforts to advance clinical programs in the area of myeloablation that are directly competitive, especially in older patients. To our knowledge, we are the only company with a multi-disease, multi-target product pipeline that is focused on myeloablation.

For our CD33 Program, there are several companies developing drugs for AML based on numerous approaches/modalities including antibody drug conjugate (ADC), naked monoclonal antibodies and bispecific antibodies. Mylotarg™, an ADC developed and marketed by Pfizer is the only FDA approved CD33 targeted therapy for adult patients and children two years and older with relapsed or refractory CD33-positive AML. Seattle Genetics was developing SGN-CD33A, a CD33 targeting ADC, but discontinued the development of its clinical trials associated with this product candidate in June 2017. Immunogen is also developing a CD33 targeting ADC, IMGN779, that is currently in a Phase 1 clinical trial for r/r AML patients age 18 and above. Amgen is developing a CD3/CD33 bispecific BiTE (AMG330) as is Amphivena (AMV-564), both of which are in Phase 1 clinical trial for r/r AML patients age 18 and above. Boehringer Ingelheim is developing a CD33 targeting naked antibody (BI836858) for patients with r/r AML or MDS age 18 and above. These drugs have different safety profiles and mechanisms of action compared to our drug candidates. AML in older patients remains an area of high medical need that could accommodate many new products with favorable safety and efficiency profiles. We will begin studying our ^{225}Ac – lintuzumab ARC in combination with chemotherapy regimens for patients with AML. We have announced that our first combination trial will be with CLAG-M for patients with relapsed or refractory disease. Combination therapies are commonly used in hematologic indications, but we believe we are the only ^{225}Ac based ARC product candidate that is being explored in combination studies in hematologic indications. To our knowledge, we are the only company with a CD33 targeting drug and the only ^{225}Ac based ARC product candidate for patients with multiple myeloma.

Government Regulation

Governmental authorities in the United States and other countries extensively regulate, among other things, the research, development, testing, manufacture, labeling, promotion, advertising, distribution and marketing of radioimmunotherapy pharmaceutical products such as those being developed by us. In the United States, the FDA regulates such products under the Federal Food, Drug and Cosmetic Act (FDCA) and implements regulations. Failure to comply with applicable FDA requirements, both before and after approval, may subject us to administrative and judicial sanctions, such as a delay in approving or refusal by the FDA to approve pending applications, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions and/or criminal prosecution.

U.S. Food and Drug Administration Regulation

Our research, development and clinical programs, as well as our manufacturing and marketing operations, are subject to extensive regulation in the United States and other countries. Most notably, all of our products that may in the future be sold in the United States are subject to regulation by the FDA. Certain of our product candidates in the United States require FDA pre-marketing approval of a BLA pursuant to 21 C.F.R. § 314. Foreign countries may require similar or more onerous approvals to manufacture or market these products.

Failure by us or by our suppliers to comply with applicable regulatory requirements can result in enforcement action by the FDA, the Nuclear Regulatory Commission or other regulatory authorities, which may result in sanctions, including but not limited to, untitled letters, warning letters, fines, injunctions, consent decrees and civil penalties; customer notifications or repair, replacement, refunds, recall, detention or seizure of our products; operating restrictions or partial suspension or total shutdown of production; refusing or delaying our requests for BLA premarket approval of new products or modified products; withdrawing BLA approvals that have already been granted; and refusal to grant export.

Employees

As of March 16, 2018, we have 25 full-time employees. None of these employees are covered by a collective bargaining agreement, and we believe our relationship with our employees is good. We also engage consultants on an as-needed basis to supplement existing staff.

ITEM 1A. RISK FACTORS

In analyzing our company, you should consider carefully the following risk factors, together with all of the other information included in this Annual Report on Form 10-K. Factors that could cause or contribute to differences in our actual results include those discussed in the following subsection, as well as those discussed above in "Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere throughout this Annual Report on Form 10-K. Each of the following risk factors, either alone or taken together, could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our company. The risks and uncertainties described below are not the only ones we face. Additional risks not currently known to us or other factors not perceived by us to present significant risks to our business at this time also may impair our business operations.

Risks Related to Our Business

We are a clinical-stage company and have generated no revenue from commercial sales to date.

We are a clinical-stage biopharmaceutical company with a limited operating history. We have no products approved for commercial sale and have not generated any revenue from product sales to date. We will encounter risks and difficulties frequently experienced by early-stage companies in rapidly evolving fields. If we do not address these risks successfully, our business will suffer.

We have incurred net losses in every year since our inception and anticipate that we will continue to incur net losses in the future.

We are not profitable and have incurred losses in each period since our inception. As of December 31, 2017, we had an accumulated deficit of $163.2 million. For the years ended December 31, 2017 and 2016, we reported a net loss of $26.6 million and $24.3 million, respectively. We expect to continue to operate at a net loss as we continue our research and development efforts, continue to conduct clinical trials and develop manufacturing, sales, marketing and distribution capabilities. There can be no assurance that the products under development by us will be approved for sale in the United States or elsewhere. Furthermore, there can be no assurance that if such products are approved they will be successfully commercialized, which would have an adverse effect on our business prospects, financial condition and results of operation.

If we fail to obtain additional financing, we will be unable to continue or complete our product development and you will likely lose your entire investment.

We do not currently have sufficient funding for the completion of development nor commercialization of our product candidates and we will need to continue to seek capital from time to time to continue development of our product candidates and to acquire and develop other product candidates. Our first product candidate is not expected to be commercialized, if approved, until at least 2019 and any partnering revenues that it may generate may not be sufficient to fund our ongoing operations. Our cash balance as of December 31, 2017 was $17.4 million. During the year ended December 31, 2017, we raised total net proceeds of approximately $3.8 million from the sale of our common stock through our ATM. On August 2, 2017, we completed an underwritten public offering of 21,500,000 shares of our common stock and warrants to purchase 18,275,000 shares of common stock at an offering price to the public of $0.75 per share. The gross proceeds from this offering were $16.1 million, before deducting underwriting discounts and commissions and other estimated offering expenses.

Our business or operations may change in a manner that would consume available funds more rapidly than anticipated and substantial additional funding may be required to maintain operations, fund expansion, develop new or enhanced products, acquire complementary products, business or technologies or otherwise respond to competitive pressures and opportunities, such as a change in the regulatory environment or a change in preferred cancer treatment modalities. However, we may not be able to secure funding when we need it or on favorable terms.

To raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock. We cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders.

If we cannot raise adequate funds to satisfy our capital requirements, we will have to delay, scale back or eliminate our research and development activities, clinical studies or future operations. We may also be required to obtain funds through arrangements with collaborators, which arrangements may require us to relinquish rights to certain technologies or products that we otherwise would not consider relinquishing, including rights to future product candidates or certain major geographic markets. We may further have to license our technology to others. This could result in sharing revenues which we might otherwise have retained for ourselves. Any of these actions may harm our business, financial condition and results of operations.

The amount of funding we will need depends on many factors, including the progress, timing and scope of our product development programs; the progress, timing and scope of our preclinical studies and clinical trials; the time and cost necessary to obtain regulatory approvals; the time and cost necessary to further develop manufacturing processes and arrange for contract manufacturing; our ability to enter into and maintain collaborative, licensing and other commercial relationships; and our partners' commitment of time and resources to the development and commercialization of our products.

We have limited access to the capital markets and even if we can raise additional funding, we may be required to do so on terms that are dilutive to you.

We have limited access to the capital markets to raise funds. The capital markets have been unpredictable in the recent past for radioisotope and other oncology companies and unprofitable companies such as ours. In addition, it is generally difficult for development-stage companies to raise capital under current market conditions. The amount of capital that a company such as ours is able to raise often depends on variables that are beyond our control. As a result, we may not be able to secure financing on terms attractive to us, or at all. If we are able to consummate a financing arrangement, the amount raised may not be sufficient to meet our future needs. If adequate funds are not available on acceptable terms, or at all, our business, including our technology licenses, results of operations, financial condition and our continued viability will be materially adversely affected.

Risks Related to Regulation

The FDA or comparable foreign regulatory authorities may disagree with our regulatory plans and we may fail to obtain regulatory approval of our product candidates.

Our products are subject to rigorous regulation by the FDA and numerous other federal, state and foreign governmental authorities. The process of seeking regulatory approval to market a radio-immunotherapy product is expensive and time-consuming, and, notwithstanding the effort and expense incurred, approval is never guaranteed. If we are not successful in obtaining timely approval of our products from the FDA, we may never be able to generate significant revenue and may be forced to cease operations. In particular, the FDA permits commercial distribution of a new radio-immunotherapy product only after a Biologics License Application (BLA) for the product has received FDA approval. The BLA process is costly, lengthy and inherently uncertain. Any BLA filed by us will have to be supported by extensive data, including, but not limited to, technical, preclinical, clinical trial, manufacturing and labeling data, to demonstrate to the FDA's satisfaction the safety and efficacy of the product for its intended use. The lengthy approval process as well as the unpredictability of future clinical trial results may result in our failing to obtain regulatory approval to market our product candidates, which would significantly harm our business, results of operations and prospects. In addition, even if we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may not approve the price we intend to charge for our products, may grant approval contingent on the performance of costly post-marketing clinical trials, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. Any of the foregoing scenarios could materially harm the commercial prospects for our product candidates.

The approval process in the United States and in other countries could result in unexpected and significant costs for us and consume management's time and other resources. The FDA and other foreign regulatory agencies could ask us to supplement our submissions, collect non-clinical data, conduct additional clinical trials or engage in other time-consuming actions, or it could simply deny our applications. In addition, even if we obtain approval to market our products in the United States or in other countries, the approval could be revoked, or other restrictions imposed if post-market data demonstrates safety issues or lack of effectiveness. We cannot predict with certainty how, or when, the FDA or other regulatory authorities will act. If we are unable to obtain the necessary regulatory approvals, our financial condition and cash flow may be materially adversely affected, and our ability to grow domestically and internationally may be limited. Additionally, even if we obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications that we request. The Company's products may not be approved for the specific indications that are most necessary or desirable for successful commercialization or profitability.

We have not demonstrated that any of our products are safe and effective for any indication.

We currently have three products in clinical development. In December 2015, the FDA cleared our IND filing for Iomab-B, and we are currently enrolling patients in the randomized, controlled, pivotal, Phase 3 clinical trial. Assuming the trial meets its endpoints, it will form the basis for a BLA. Additionally, there are physician IND trials at the FHCRC that have been conducted or are currently ongoing at FHCRC with Iomab-B and the BC8 antibody we licensed. We have completed the Phase 1 portion of the Phase 1/2 multi- center trial for patient with AML with fractionated doses of Actimab-A under its own federal IND and are enrolling patients in the Phase 2 portion of the trial. In February 2017, we initiated a Phase 1 clinical trial of Actimab-M in patients with refractory multiple myeloma and we are currently enrolling patients on this trial.

We may encounter substantial delays in our clinical trials or may not be able to conduct our trials on the timelines we expect.

We cannot predict whether we will encounter problems with any of our ongoing or planned clinical trials that will cause us or regulatory authorities to delay, suspend, or discontinue clinical trials or to delay the analysis of data from ongoing clinical trials. Any of the following could delay or disrupt the clinical development of our product candidates and potentially cause our product candidates to fail to receive regulatory approval:

- conditions imposed on us by the FDA or comparable foreign authorities regarding the scope or design of our clinical trials;

delays in receiving, or the inability to obtain, required approvals from institutional review boards (IRBs) or other reviewing entities at clinical sites selected for participation in our clinical trials;

delays in enrolling patients into clinical trials;

a lower than anticipated retention rate of patients in clinical trials;

the need to repeat or discontinue clinical trials as a result of inconclusive or negative results or unforeseen complications in testing or because the results of later trials may not confirm positive results from earlier preclinical studies or clinical trials;

inadequate supply, delays in distribution, deficient quality of, or inability to purchase or manufacture drug product, comparator drugs or other materials necessary to conduct our clinical trials;

unfavorable FDA or other foreign regulatory inspection and review of a clinical trial site or records of any clinical or preclinical investigation;

serious and unexpected drug-related side effects experienced by participants in our clinical trials, which may occur even if they were not observed in earlier trials or only observed in a limited number of participants;

- a finding that the trial participants are being exposed to unacceptable health risks;
- the placement by the FDA or a foreign regulatory authority of a clinical hold on a trial; or
- delays in obtaining regulatory agency authorization for the conduct of our clinical trials.

We may suspend, or the FDA or other applicable regulatory authorities may require us to suspend, clinical trials of a product candidate at any time if we or they believe the patients participating in such clinical trials, or in independent third party clinical trials for drugs based on similar technologies, are being exposed to unacceptable health risks or for other reasons.

Further, individuals involved with our clinical trials may serve as consultants to us from time to time and receive stock options or cash compensation in connection with such services. If these relationships and any related compensation to the clinical investigator carrying out the study result in perceived or actual conflicts of interest, or the FDA concludes that the financial relationship may have affected interpretation of the study, the integrity of the data generated at the applicable clinical trial site may be questioned and the utility of the clinical trial itself may be jeopardized. The delay, suspension or discontinuation of any of our clinical trials, or a delay in the analysis of clinical data for our product candidates, for any of the foregoing reasons, could adversely affect our efforts to obtain regulatory approval for and to commercialize our product candidates, increase our operating expenses and have a material adverse effect on our financial results.

Clinical trials may also be delayed or terminated as a result of ambiguous or negative interim results. In addition, a clinical trial may be suspended or terminated by us, the FDA, the IRBs at the sites where the IRBs are overseeing a trial, or a data safety monitoring board, or DSMB (Data Safety Monitoring Board)/DMC (Data Monitoring Committee), overseeing the clinical trial at issue, or other regulatory authorities due to a number of factors, including:

- failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols;
- inspection of the clinical trial operations or trial sites by the FDA or other regulatory authorities resulting in the imposition of a clinical hold;
- varying interpretation of data by the FDA or similar foreign regulatory authorities;
- failure to achieve primary or secondary endpoints or other failure to demonstrate efficacy;

unforeseen safety issues; or

lack of adequate funding to continue the clinical trial.

Modifications to our product candidates may require federal approvals.

The BLA application is the vehicle through which the company may formally propose that the FDA approve a new pharmaceutical for sale and marketing in the United States. Once a particular product candidate receives FDA approval, expanded uses or uses in new indications of our products may require additional human clinical trials and new regulatory approvals, including additional IND and BLA submissions and premarket approvals before we can begin clinical development, and/or prior to marketing and sales. If the FDA requires new approvals for a particular use or indication, we may be required to conduct additional clinical studies, which would require additional expenditures and harm our operating results. If the products are already being used for these new indications, we may also be subject to significant enforcement actions.

Conducting clinical trials and obtaining approvals is a time-consuming process, and delays in obtaining required future approvals could adversely affect our ability to introduce new or enhanced products in a timely manner, which in turn would have an adverse effect on our business prospects, financial condition and results of operation.

The FDA or comparable foreign regulatory authorities may disagree with our regulatory plans, and we may fail to obtain regulatory approval of our product candidates.

In June 2012, we acquired rights to BC8 (Iomab), a clinical stage monoclonal antibody with safety and efficacy data in more than 500 patients in need of HSCT. Iomab-B is our product candidate that links ^{131}I to the BC8 antibody that is being studied in an ongoing Phase 3 pivotal trial. Product candidates utilizing this antibody would require BLA approval before they can be marketed in the United States. We have ongoing a Phase 2 portion of our multi-center Phase 1/2 Actimab-A clinical trial for our product candidate consisting of the anti-CD33 antibody lintuzumab linked with the isotope ^{225}Ac in AML. We are also studying our lintuzumab-^{225}AC product candidate in our Phase 1 Actimab-M trial for patient with multiple myeloma and are planning to conduct a Phase 2 Actimab-MDS trial for patients with high-risk MDS with a p53 genetic mutation prior to a bone marrow transplant and are planning a Phase 1 clinical trial in combination with CLAG-M for patients with relapsed or refractory AML. Product candidates utilizing this antibody would require BLA approval before they can be marketed in the United States. We are in the early stages of evaluating other product candidates consisting of conjugates of ^{225}Ac with human or humanized antibodies for pre-clinical and clinical development in other types of cancer. The FDA may not approve these products for the indications that are necessary or desirable for successful commercialization. The FDA may fail to approve any BLA we submit for new product candidates or for new intended uses or indications for approved products or future product candidates. Failure to obtain FDA approval for our products in the proposed indications would have a material adverse effect on our business prospects, financial condition and results of operations.

Clinical trials necessary to support approval of our product candidates are time-consuming and expensive.

Initiating and completing clinical trials necessary to support FDA approval of a BLA for Iomab-B, CD33 program candidates, and other product candidates, is a time-consuming and expensive process, and the outcome is inherently uncertain. Moreover, the results of early clinical trials are not necessarily predictive of future results, and any product candidate we advance into clinical trials may not have favorable results in later clinical trials. We have worked with the FDA to develop a clinical trial designed to test the safety and efficacy of Iomab-B in patients with relapsed or refractory AML who are age 55 and above prior to a BMT. This trial is designed to support a BLA filing for marketing approval by the FDA, pending results from the trial. We have also worked with the FDA to develop a clinical trial designed to test the initial safety and efficacy of Actimab-A in newly diagnosed AML patients over the age of 60. Subsequent to the completion of the Phase 1 portion of the Phase 1/2 clinical trial we submitted protocol amendments to the FDA in August of 2016, which were agreed upon in September of 2016. The Phase 2 portion of the trial is now underway with the purpose of examining the use of Actimab-A in AML patients who are not eligible for approved forms of treatment with curative intent. The trial is not designed to support marketing approval for the product candidate, and one or more additional trials will have to be conducted in the future before we file a BLA. In addition, there can be no assurance that the data generated during the trial will meet our chosen safety and effectiveness endpoints or otherwise produce results that will eventually support the filing or approval of a BLA. Even if the data from this trial are favorable, these data may not be predictive of the results of any future clinical trials.

Our clinical trials may fail to demonstrate adequately the efficacy and safety of our product candidates, which would prevent or delay regulatory approval and commercialization.

Even if our clinical trials are completed as planned, we cannot be certain that their results will support our product candidate claims or that the FDA or foreign authorities will agree with our conclusions regarding them. Success in pre-clinical studies and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be sure that the later trials will replicate the results of prior trials and pre-clinical studies. The clinical trial process may fail to demonstrate that our product candidates are safe and effective for the proposed indicated uses. If FDA concludes that the clinical trials for Iomab-B, Actimab-A, Actimab-M, or any other product candidate for which we might seek approval, have failed to demonstrate safety and effectiveness, we would not receive FDA approval to market that product candidate in the United States for the indications sought. In addition, such an outcome could cause us to abandon the product candidate and might delay development of others. Any delay or termination of our clinical trials will delay or preclude the filing of any submissions with the FDA and, ultimately, our ability to commercialize our product candidates and generate revenues. It is also possible that patients enrolled in clinical trials will experience adverse side effects that are not currently part of a product candidate’s profile.

The intellectual property related to antibodies we have licensed has expired or likely expired

The humanized antibody, lintuzumab, which we use in our CD33 program product candidates is covered by the claims of issued patents that we license from Facet Biotech Corporation, a wholly-owned subsidiary of AbbVie Laboratories. We believe the key patents related to this antibody have likely expired and are undertaking a review of the intellectual property and conducting a business analysis related to this agreement. Post patent expiration, it is generally possible that others may be eventually able to use an antibody with the same sequence, and we will then need to rely on additional patent protection covering alpha particle drug products comprising ^{225}Ac. Any competing product based on the lintuzumab antibody is likely to require several years of development before achieving our product candidate's current status and may be subject to significant regulatory hurdles but is nevertheless a possibility that could negatively impact our business in the future. Neither the antibody portion nor the composition of matter as a whole for the conjugated Iomab-B product candidate is covered by the claims of any issued or pending patents. Accordingly, there are no patents that would prevent others from using an antibody with the same antibody sequence in any drug product (e.g., those comprising ^{131}I or alpha particle emitters). Any competing product based on the antibody used in Iomab-B is likely to require several years of development before achieving our product candidate's current status and may be subject to significant regulatory hurdles but is nevertheless a possibility that could negatively impact our business in the future.

The indications for which we are developing our product candidates for are orphan drug designations, which are disease indications that affect fewer than 200,000 patients in the United States and less than 5 in 10,000 patients in the European Union ("EU"). We have received orphan drug designation for Iomab-B and our lintuzumab-CD33 ARC for patients with AML in both the United States and the EU. As a result, if our products are to be approved they may receive 7 years and 10 years of market exclusivity in the US and EU, respectively. In addition, our product candidates are biologics combined with radioisotopes. The Hatch-Waxman Act requires that a manufacturer of generic drugs, which for a biologic drug is called a biosimilar, requires that the manufacturer demonstrate bioequivalence. We believe that due to the nature of radioisotopes having half-lives combined with the complexities of biologic drugs would make it difficult for a manufacturer to demonstrate bioequivalence of our product candidates.

Our CD33 program clinical trials are testing the same drug construct

Our CD33 program clinical trials including our Phase 2 Actimab-A trial in AML, Phase 1 trial in multiple myeloma, planned Phase 2 trial in high-risk MDS and planned Phase 1 trial in combination with CLAG-M in AML are studying the same drug construct consisting of ^{225}Ac labeled lintuzumab. Negative results from any of these trials could negatively impact our ability to enroll or complete our other trials studying ^{225}Ac labeled lintuzumab.

We may be unable to obtain a sufficient supply of ^{225}Ac ***medical grade isotope.***

^{225}Ac medical grade isotope is a key component of Actimab-A, Actimab-M and other ^{225}Ac based drug candidates that we might consider. There are limited quantities of ^{225}Ac available today. The existing supplier of ^{225}Ac to us is Oak Ridge National Laboratory, or ORNL, a science and energy national laboratory in the Department of Energy system. ORNL manufactures ^{225}Ac by eluting it from its supply of Thorium-229. Although this has proven to be a very reliable source of production for a number of years, it is limited by the quantity of Thorium-229 at ORNL. We believe that the current approximate maximum of ^{225}Ac production from this source is sufficient for approximately 1,000–2,000 patient treatments per year. Since our needs are significantly below that amount at this time and will continue to be below that prior to commercializing a product with a potential of selling more than 2,000 patient doses per year, we believe that this supply will be sufficient for completion of clinical trials and early commercialization. Our contract for supply of this isotope from ORNL must be renewed yearly, and the current contract extends through the end of 2018. While we expect this contract will be renewed at the end of its term as it has since 2009, there can be no assurance that ORNL will renew the contract or that the United States Department of Energy will not change its policies that allow for the sale of isotope to us. Failure to acquire sufficient quantities of medical grade ^{225}Ac would make it impossible to effectively complete clinical trials and to commercialize Actimab-A, Actimab-M and any other ^{225}Ac based drug candidates that we may develop and would materially harm our business.

If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.

The timely completion of clinical trials in accordance with their protocols depends on our ability to enroll a sufficient number of patients who remain in the trial until its conclusion. We may experience difficulties in patient enrollment in our clinical trials for a variety of reasons, including:

the size and nature of the patient population;

the patient eligibility criteria defined in the protocol;

the size of the study population required for analysis of the trial's primary endpoints;

the proximity of patients to trial sites;

the design of the trial;

our ability to recruit clinical trial investigators with the appropriate competencies and expertise;

competing clinical trials for similar or alternate therapeutic treatments;

clinician's and patients' perceptions as to the potential advantages and side effects of the product candidate being studied in relation to other available therapies;

our ability to obtain and maintain patient consents; and

the risk that patients enrolled in clinical trials will not complete a clinical trial.

In addition, patients participating in refractory AML clinical trials are seriously and often terminally ill and therefore may not complete the clinical trial due to reasons including comorbid conditions or occurrence of adverse medical events related or unrelated to the investigational products, or death. Even if we are able to enroll a sufficient number of patients in our clinical trials, delays in patient enrollment will result in increased costs or affect the timing of our planned trials, which could adversely affect our ability to advance the development of our product candidates.

FDA may take actions that would prolong, delay, suspend, or terminate clinical trials of our product candidates, which may delay or prevent us from commercializing our product candidates on a timely basis.

There can be no assurance that the data generated in our clinical trials will be acceptable to FDA or that if future modifications during the trial are necessary, that any such modifications will be acceptable to FDA. Certain modifications to a clinical trial protocol made during the course of the clinical trial have to be submitted to the FDA. This could result in the delay or halt of a clinical trial while the modification is evaluated. In addition, depending on the quantity and nature of the changes made, FDA could take the position that some or all of the data generated by the clinical trial is not usable because the same protocol was not used throughout the trial. This might require the enrollment of additional subjects, which could result in the extension of the clinical trial and the FDA delaying approval of a product candidate. If the FDA believes that its prior approval is required for a particular modification, it can delay or halt a clinical trial while it evaluates additional information regarding the change.

Any delay or termination of our current or future clinical trials as a result of the risks summarized above, including delays in obtaining or maintaining required approvals from IRBs, delays in patient enrollment, the failure of patients to continue to participate in a clinical trial, and delays or termination of clinical trials as a result of protocol modifications or adverse events during the trials, may cause an increase in costs and delays in the filing of any submissions with the FDA, delay the approval and commercialization of our product candidates or result in the failure of the clinical trial, which could adversely affect our business, operating results and prospects. Lengthy delays in the completion of our Actimab-A clinical trials would adversely affect our business and prospects and could cause us to cease operations.

Risks Related to Third Parties

We rely on third parties to conduct our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines or comply with regulatory requirements, we may not be able to obtain regulatory approval for or commercialize our product candidates.

We do not have the ability to independently conduct our pre-clinical and clinical trials for our product candidates and we must rely on third parties, such as contract research organizations, medical institutions, clinical investigators and contract laboratories to conduct such trials. Our reliance on these third parties for clinical development activities results in reduced control over these activities. Moreover, the FDA requires us to comply with regulations and standards, commonly referred to as GCPs (good clinical practices), for conducting, 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 does not relieve us of these responsibilities and requirements. If we or any of our third-party contractors fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials complies with GCP regulations. In addition, our clinical trials must be conducted with product produced under current good manufacturing practice, or cGMP, regulations. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process.

If our consultants, contract research organizations and other similar entities with which we are working do not successfully carry out their contractual duties, meet expected deadlines, or comply with applicable regulations, we may be required to replace them. Although we believe that there are a number of other third-party contractors we could engage to continue these activities, we may not be able to enter into arrangements with alternative third-party contractors or to do so on commercially reasonable terms, which may result in a delay of our planned clinical trials and delayed development of our product candidates.

In addition, our third-party contractors are not our employees, and except for remedies available to us under our agreements with such third-party contractors, we cannot control whether or not they devote sufficient time and resources to our programs. If these third parties do not successfully carry out their contractual duties or regulatory obligations or meet expected deadlines, or if the quality or accuracy of the data they obtain is compromised due to the failure to adhere to our clinical protocols or regulatory requirements or for other reasons, our pre-clinical development activities or clinical trials may be extended, delayed, suspended or terminated, and we may not be able to obtain regulatory approval for, or successfully commercialize, our product candidates on a timely basis, if at all, and our business, operating results and prospects would be adversely affected.

Our product candidates for which we intend to seek approval as biologic products may face competition sooner than anticipated.

Our product candidates are regulated by the FDA as biologic products and we intend to seek approval for these products pursuant to the BLA pathway. The Biologics Price Competition and Innovation Act of 2009, or BPCIA, created an abbreviated pathway for the approval of biosimilar and interchangeable biologic products. The abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable" based on its similarity to an existing brand product. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product was approved under a BLA. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning are subject to uncertainty. While it is uncertain when such processes intended to implement BPCIA may be fully adopted by the FDA, any such processes could have a material adverse effect on the future commercial prospects for our biologic products.

Our product candidates may never achieve market acceptance.

Iomab-B, CD33 program candidates and future product candidates that we may develop may never gain market acceptance among physicians, patients and the medical community. The degree of market acceptance of any of our products will depend on a number of factors, including the actual and perceived effectiveness and reliability of the product; the results of any long-term clinical trials relating to use of the product; the availability, relative cost and perceived advantages and disadvantages of alternative technologies; the degree to which treatments using the product are approved for reimbursement by public and private insurers; the strength of our marketing and distribution infrastructure; and the level of education and awareness among physicians and hospitals concerning the product.

We believe that oncologists and other physicians will not widely adopt a product candidate unless they determine, based on experience, clinical data, and published peer-reviewed journal articles, that the use of that product candidate provides an effective alternative to other means of treating specific cancers. Patient studies or clinical experience may indicate that treatment with our product candidates does not provide patients with sufficient benefits in extension of life or quality of life. We believe that recommendations and support for the use of each product candidate from influential physicians will be essential for widespread market acceptance. Our product candidates are still in the development stage and it is premature to attempt to gain support from physicians at this time. We can provide no assurance that such support will ever be obtained. If our product candidates do not receive such support from these physicians and from long-term data, physicians may not use or continue to use, and hospitals may not purchase or continue to purchase, them.

Failure of Iomab-B, CD33 program candidates or any of our other product candidates to significantly penetrate current or new markets would negatively impact our business financial condition and results of operations.

Even if we receive regulatory approval of our product candidates, we will be subject to ongoing regulatory obligations and continued regulatory review.

Any regulatory approvals that we receive for our product candidates will require surveillance to monitor the safety and efficacy of the product candidate. The FDA may also require a risk evaluation and mitigation strategy in order to approve our product candidates, which could entail requirements for a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or a comparable foreign regulatory authority approves our product candidates, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion, import, export and recordkeeping for our product candidates will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMPs and cGCPs for any clinical trials that we conduct post-approval. In addition, the FDA could require us to conduct another study to obtain additional safety or biomarker information. Later discovery of previously unknown problems with our product candidates, including adverse events of unanticipated severity or frequency, or with our third-party suppliers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

restrictions on the marketing or manufacturing of our product candidates, withdrawal of the product from the market, or voluntary or mandatory product recalls;

fines, warning letters or holds on clinical trials;

refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of license approvals;

product seizure or detention, or refusal to permit the import or export of our product candidates; and

injunctions or the imposition of civil or criminal penalties.

The FDA’s and other regulatory authorities’ policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the

adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, and we may not achieve or sustain profitability.

Coverage and reimbursement may be limited or unavailable in certain market segments for our product candidates which could limit our sales of our product candidates, if approved.

The commercial success of our product candidates in both domestic and international markets will be substantially dependent on whether third-party coverage and reimbursement is available for patients that use our products. However, the availability of insurance coverage and reimbursement for newly approved cancer therapies is uncertain, and therefore, third-party coverage may be particularly difficult to obtain even if our products are approved by the FDA as safe and efficacious. Patients using existing approved therapies are generally reimbursed all or part of the product cost by Medicare or other third-party payors. Medicare, Medicaid, health maintenance organizations and other third-party payors are increasingly attempting to contain healthcare costs by limiting both coverage and the level of reimbursement of new drugs, and, as a result, they may not cover or provide adequate payment for these products. Submission of applications for reimbursement approval generally does not occur prior to the filing of a BLA for that product and may not be granted until many months after BLA approval. In order to obtain coverage and reimbursement for these products, we or our commercialization partners may have to agree to a net sales price lower than the net sales price we might charge in other sales channels. The continuing efforts of government and third-party payors to contain or reduce the costs of healthcare may limit our revenue. Initial dependence on the commercial success of our products may make our revenues particularly susceptible to any cost containment or reduction efforts.

We may be subject to claims that our third-party service providers, consultants or current or former employees have wrongfully used or disclosed confidential information of third parties.

We have received confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies. We may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or otherwise used or disclosed confidential information of these third parties or our employees' former employers. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial cost and be a distraction to our management and employees.

We depend on third-party manufacturers to produce our pre-clinical and clinical trial drug supplies.

We do not currently operate manufacturing facilities for pre-clinical or clinical production of any of our product candidates. We rely on third-party manufacturers to supply, store, and distribute pre-clinical and clinical supply of our product candidates, and plan to continue to do so for the foreseeable future. Any performance failure on the part of our existing or future manufacturers could delay clinical development or regulatory approval of our product candidates or commercialization of any approved products. We are currently manufacturing the antibody lintuzumab, which is a component of our Actimab-A and Actimab-M drug candidates that are currently in a Phase 2 and Phase 1 clinical trial, respectively. At this time, we are undertaking release testing of a new batch of lintuzumab antibody. If we are unable to successfully release the manufactured batch of the lintuzumab antibody in a timely fashion, we may encounter delays in our clinical trials. Inability to secure continued clinical supply of lintuzumab antibody may impact our competitive position with these drug candidates as manufacturing another batch would require additional resources and time.

Our product candidates require precise, high-quality manufacturing. Failure by our contract manufacturer to achieve and maintain high manufacturing standards could result in patient injury or death, product recalls or withdrawals, delays or failures in testing or delivery, cost overruns, or other problems that could seriously hurt our business. Contract manufacturers may encounter difficulties involving production yields, quality control, and quality assurance. These manufacturers are subject to ongoing periodic and unannounced inspections by the FDA and corresponding state and foreign agencies to ensure strict compliance with cGMPs and other applicable government regulations and corresponding foreign standards; we do not have control over third-party manufacturers' compliance with these regulations and standards.

Furthermore, these third-party contractors, whether foreign or domestic, may experience regulatory compliance difficulty, mechanical shut downs, employee strikes, or any other unforeseeable acts that may delay or limit production. Our inability to adequately establish, supervise and conduct (either ourselves or through third parties) all aspects of the formulation and manufacturing processes, and the inability of third-party manufacturers to consistently

supply quality product when required would have a material adverse effect on our ability to commercialize our products. We have faced delays and risks associated with reliance on key third party manufacturers in the past and may be faced with such delays and risks in the future. Any future manufacturing interruptions or related supply issues could have an adverse effect on our company, including delays in clinical trials.

If we are successful in obtaining marketing approval from the FDA and/or other regulatory agencies for any of our product candidates, we anticipate continued reliance on third-party manufacturers.

To date, our product candidates have been manufactured in small quantities for preclinical and clinical testing by third-party manufacturers. If the FDA or other regulatory agencies approve any of our product candidates for commercial sale, we expect that we would continue to rely, at least initially, on third-party specialized manufacturers to produce commercial quantities of approved products. These manufacturers may not be able to successfully increase the manufacturing capacity for any approved product in a timely or economic manner, or at all. Significant scale-up of manufacturing may require additional validation studies, which the FDA must review and approve. If third party manufacturers are unable to successfully increase the manufacturing capacity for a product candidate, or we are unable to establish our own manufacturing capabilities, the commercial launch of any approved products may be delayed or there may be a shortage in supply, which in turn could have a material adverse effect on our business.

In addition, the facilities used by our contract manufacturers to manufacture our product candidates must be approved by the FDA pursuant to inspections that will be conducted after we submit a BLA to the FDA. We do not control the manufacturing process of, and are completely dependent on, our contract manufacturing partners for compliance with cGMPs. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or other regulatory authorities, they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved.

We may have conflicts with our partners that could delay or prevent the development or commercialization of our product candidates.

We may have conflicts with our partners, such as conflicts concerning the interpretation of preclinical or clinical data, the achievement of milestones, the interpretation of contractual obligations, payments for services, development obligations or the ownership of intellectual property developed during our collaboration. If any conflicts arise with any of our partners, such partner may act in a manner that is adverse to our best interests. Any such disagreement could result in one or more of the following, each of which could delay or prevent the development or commercialization of our product candidates, and in turn prevent us from generating revenues: unwillingness on the part of a partner to pay us milestone payments or royalties we believe are due under a collaboration; uncertainty regarding ownership of intellectual property rights arising from our collaborative activities, which could prevent us from entering into additional collaborations; unwillingness by the partner to cooperate in the development or manufacture of the product, including providing us with product data or materials; unwillingness on the part of a partner to keep us informed regarding the progress of its development and commercialization activities or to permit public disclosure of the results of those activities; initiating litigation or alternative dispute resolution options by either party to resolve the dispute; or attempts by either party to terminate the agreement.

We face significant competition from other biotechnology and pharmaceutical companies.

Our product candidates face, and will continue to face, intense competition from large pharmaceutical companies, as well as academic and research institutions. We compete in an industry that is characterized by (i) rapid technological change, (ii) evolving industry standards, (iii) emerging competition and (iv) new product introductions. Our competitors have existing products and technologies that will compete with our product candidates and technologies and may develop and commercialize additional products and technologies that will compete with our product candidates and technologies. Because several competing companies and institutions have greater financial resources than us, they may be able to (i) provide broader services and product lines, (ii) make greater investments in research and development, or R&D, and (iii) carry on broader R&D initiatives. Our competitors also have greater development capabilities than we do and have substantially greater experience in undertaking preclinical and clinical testing of product candidates, obtaining regulatory approvals, and manufacturing and marketing pharmaceutical products. They

also have greater name recognition and better access to customers than us. Our chief competitors include companies such as Bayer AG, GlaxoSmithKline Plc and Spectrum Pharmaceuticals, Inc. and others.

Our product candidates may cause undesirable side effects or have other properties that could halt their clinical development, prevent their regulatory approval, limit their commercial potential, or result in significant negative consequences

Undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign authorities. The drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly. Even if any of our product candidates receives marketing approval, as greater numbers of patients use a product following its approval, an increase in the incidence of side effects or the incidence of other post-approval problems that were not seen or anticipated during pre-approval clinical trials could result in a number of potentially significant negative consequences, including:

regulatory authorities may withdraw their approval of the product;

regulatory authorities may require the addition of labeling statements, such as warnings or contraindications;

we may be required to change the way the product is administered, conduct additional clinical trials or change the labeling of the product;

we may elect, or we may be required, to recall or withdraw product from the market;

we could be sued and held liable for harm caused to patients; and

our reputation may suffer.

Any of these events could substantially increase the costs and expenses of developing, commercializing and marketing any such product candidates or could harm or prevent sales of any approved products.

Risks Related to Our Intellectual Property

We depend upon securing and protecting critical intellectual property.

We are dependent on obtaining and maintaining patents, trade secrets, copyright and trademark protection of our technologies in the United States and other jurisdictions, as well as successfully enforcing this intellectual property and defending this intellectual property against third-party challenges. The degree of future protection of our proprietary rights is uncertain for product candidates that are currently in the early stages of development because we cannot predict which of these product candidates will ultimately reach the commercial market or whether the commercial versions of these product candidates will incorporate proprietary technologies.

Our patent position is highly uncertain and involves complex legal and factual questions.

Accordingly, we cannot predict the breadth of claims that may be allowed or enforced under our patents or in third-party patents. For example, we or our licensors might not have been the first to make the inventions covered by each of our pending patent applications and issued patents; we or our licensors might not have been the first to file patent applications for these inventions; others may independently develop similar or alternative technologies or duplicate any of our technologies; it is possible that none of our pending patent applications or the pending patent applications of our licensors will result in issued patents; our issued patents and issued patents of our licensors may not provide a basis for commercially viable technologies, or may not provide us with any competitive advantages, or may be challenged and invalidated by third parties; and, we may not develop additional proprietary technologies that

are patentable.

As a result, our owned and licensed patents may not be valid, and we may not be able to obtain and enforce patents and to maintain trade secret protection for the full commercial extent of our technology. The extent to which we are unable to do so could materially harm our business.

We or our licensors have applied for and will continue to apply for patents for certain products. Such applications may not result in the issuance of any patents, and any patents now held or that may be issued may not provide us with adequate protection from competition. Furthermore, it is possible that patents issued or licensed to us may be challenged successfully. In that event, if we have a preferred competitive position because of such patents, such preferred position would be lost. If we are unable to secure or to continue to maintain a preferred position, we could become subject to competition from the sale of generic products. Failure to receive, inability to protect, or expiration of our patents for medical use, manufacture, conjugation and labeling of ^{225}Ac, the antibodies that we license from third parties, or subsequent related filings, would adversely affect our business and operations.

Patents issued or licensed to us may be infringed by the products or processes of others. The cost of enforcing our patent rights against infringers, if such enforcement is required, could be significant, and we do not currently have the financial resources to fund such litigation. Further, such litigation can go on for years and the time demands could interfere with our normal operations. There has been substantial litigation and other proceedings regarding patent and other intellectual property rights in the pharmaceutical industry. We may become a party to patent litigation and other proceedings. The cost to us of any patent litigation, even if resolved in our favor, could be substantial. Some of our competitors may be able to sustain the costs of such litigation more effectively than we can because of their substantially greater financial resources. Litigation may also absorb significant management time.

Unpatented trade secrets, improvements, confidential know-how and continuing technological innovation are important to our scientific and commercial success. Although we attempt to and will continue to attempt to protect our proprietary information through reliance on trade secret laws and the use of confidentiality agreements with our partners, collaborators, employees and consultants and other appropriate means, these measures may not effectively prevent disclosure of our proprietary information, and, in any event, others may develop independently, or obtain access to, the same or similar information.

Certain of our patent rights are licensed to us by third parties. If we fail to comply with the terms of these license agreements, our rights to those patents may be terminated, and we will be unable to conduct our business.

If we are found to be infringing on patents or trade secrets owned by others, we may be forced to cease or alter our product development efforts, obtain a license to continue the development or sale of our products, and/or pay damages.

Our manufacturing processes and potential products may violate proprietary rights of patents that have been or may be granted to competitors, universities or others, or the trade secrets of those persons and entities. As the pharmaceutical industry expands and more patents are issued, the risk increases that our processes and potential products may give rise to claims that they infringe the patents or trade secrets of others. These other persons could bring legal actions against us claiming damages and seeking to enjoin clinical testing, manufacturing and marketing of the affected product or process. If any of these actions are successful, in addition to any potential liability for damages, we could be required to obtain a license in order to continue to conduct clinical tests, manufacture or market the affected product or use the affected process. Required licenses may not be available on acceptable terms, if at all, and the results of litigation are uncertain. If we become involved in litigation or other proceedings, it could consume a substantial portion of our financial resources and the efforts of our personnel.

Our ability to protect and enforce our patents does not guarantee that we will secure the right to commercialize our patents.

A patent is a limited monopoly right conferred upon an inventor, and his successors in title, in return for the making and disclosing of a new and non-obvious invention. This monopoly is of limited duration but, while in force, allows the patent holder to prevent others from making and/or using its invention. While a patent gives the holder this right to exclude others, it is not a license to commercialize the invention where other permissions may be required for commercialization to occur. For example, a drug cannot be marketed without the appropriate authorization from the FDA, regardless of the existence of a patent covering the product. Further, the invention, even if patented itself, cannot be commercialized if it infringes the valid patent rights of another party.

We rely on confidentiality agreements to protect our trade secrets. If these agreements are breached by our employees or other parties, our trade secrets may become known to our competitors.

We rely on trade secrets that we seek to protect through confidentiality agreements with our employees and other parties. If these agreements are breached, our competitors may obtain and use our trade secrets to gain a competitive advantage over us. We may not have any remedies against our competitors and any remedies that may be available to us may not be adequate to protect our business or compensate us for the damaging disclosure. In addition, we may have to expend resources to protect our interests from possible infringement by others.

The use of hazardous materials, including radioactive and biological materials, in our research and development efforts imposes certain compliance costs on us and may subject us to liability for claims arising from the use or misuse of these materials.

Our research, development and manufacturing activities involve the controlled use of hazardous materials, including chemicals, radioactive and biological materials, such as radioactive isotopes. We are subject to federal, state, local and foreign environmental laws and regulations governing, among other matters, the handling, storage, use and disposal of these materials and some waste products. We cannot completely eliminate the risk of contamination or injury from these materials and we could be held liable for any damages that result, which could exceed our financial resources. We currently maintain insurance coverage for injuries resulting from the hazardous materials we use; however, future claims may exceed the amount of our coverage. Also, we do not have insurance coverage for pollution cleanup and removal. Currently the costs of complying with such federal, state, local and foreign environmental regulations are not significant, and consist primarily of waste disposal expenses. However, they could become expensive, and current or future environmental laws or regulations may impair our research, development, production and commercialization efforts.

We may undertake international operations, which will subject us to risks inherent with operations outside of the United States.

Although we do not have any international operations at this time, we intend to seek market clearances in foreign markets that we believe will generate significant opportunities. However, even with the cooperating of a commercialization partner, conducting drug development in foreign countries involves inherent risks, including, but not limited to difficulties in staffing, funding and managing foreign operations; unexpected changes in regulatory requirements; export restrictions; tariffs and other trade barriers; difficulties in protecting, acquiring, enforcing and litigating intellectual property rights; fluctuations in currency exchange rates; and potentially adverse tax consequences.

If we were to experience any of the difficulties listed above, or any other difficulties, any international development activities and our overall financial condition may suffer and cause us to reduce or discontinue our international development and registration efforts.

We are highly dependent on our key personnel, and if we are not successful in attracting and retaining highly qualified personnel, we may not be able to successfully implement our business strategy.

Our future operations and successes depend in large part upon the continued service of key members of our senior management team whom we are highly dependent upon to manage our business. If any member of our current senior management terminates his employment with us and we are unable to find a suitable replacement quickly, the departure could have a material adverse effect on our business.

Our future success also depends on our ability to identify, attract, hire or engage, retain and motivate other well-qualified managerial, technical, clinical and regulatory personnel. There can be no assurance that such professionals will be available in the market, or that we will be able to retain existing professionals or meet or continue to meet their compensation requirements. Furthermore, the cost base in relation to such compensation, which may include equity compensation, may increase significantly, which could have a material adverse effect on us. Failure to establish and maintain an effective management team and workforce could adversely affect our ability to operate, grow and manage our business.

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

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

the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, to induce, or in return for, the purchase or recommendation of an item or service reimbursable under a federal healthcare program, such as the Medicare and Medicaid programs;

federal civil and criminal false claims laws and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent;

the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created federal criminal statutes that prohibit executing a scheme to defraud any healthcare benefit program and making false statements relating to healthcare matters;

HIPAA, as amended by the Health Information Technology and Clinical Health Act, or HITECH, and its implementing regulations, which imposes certain requirements relating to the privacy, security, and transmission of individually identifiable health information;

the federal physician sunshine requirements under PPACA, which require certain manufacturers of drugs, devices, biologics, and medical supplies to report annually to the U.S. Department of Health and Human Services information related to payments and other transfers of value to physicians, other healthcare providers, and teaching hospitals, and ownership and investment interests held by physicians and other healthcare providers and their immediate family members and applicable group purchasing organizations;

state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws that may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways, thus complicating compliance efforts.

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

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

Recent federal legislation will increase pressure to reduce prices of pharmaceutical products paid for by Medicare, which could materially adversely affect our revenue, if any, and our results of operations.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, also called the MMA, changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly and introduced a new reimbursement methodology based on average sales prices for physician-administered drugs. In addition, this legislation provided authority for limiting the number of drugs that will be covered in any therapeutic class. As a result of this legislation and the expansion of federal coverage of drug products, we expect that there will be additional pressure to reduce costs. These cost reduction initiatives and other provisions of this legislation could decrease the scope of coverage and the price that we receive for any approved products and could harm our business. While the MMA applies only to drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policies and payment limitations in setting their own reimbursement rates, and any reduction in reimbursement that results from the MMA may cause a similar reduction in payments from private payors. This legislation may pose an even greater risk to our drug candidates as a significant portion of the target patient population for our drug candidates would likely be over 65 years of age and, therefore, many such patients will be covered by Medicare.

In March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act, or collectively, the PPACA, became law in the United States. The goal of the PPACA is to reduce the cost of healthcare and substantially change the way healthcare is financed by both governmental 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 PPACA may result in downward pressure on pharmaceutical reimbursement, which could negatively affect market acceptance of our drug candidates, if approved, or any of our future products. In 2012, members of the U.S. Congress and some state legislatures sought to overturn certain provisions of the PPACA including those concerning the mandatory purchase of insurance. However, on June 28, 2012, the United States Supreme Court upheld the constitutionality of these provisions. Members of the U.S. Congress have since proposed a number of legislative initiatives, including possible repeal of the PPACA. We cannot predict the outcome or impact of current proposals or whether new proposals will be made or adopted, when they may be adopted or what impact they may have on us if they are adopted. These challenges add to the uncertainty of the legislative changes as part of ACA. Changes that may affect our business include those governing enrollment in federal healthcare programs, reimbursement changes, fraud and abuse and enforcement. These changes will impact existing government healthcare programs and will result in the development of new programs, including Medicare payment for performance initiatives and improvements to the physician quality reporting system and feedback program.

Managing our growth as we expand operations may strain our resources.

We expect to need to grow rapidly in order to support additional, larger, and potentially international, pivotal clinical trials of our product candidates, which will place a significant strain on our financial, managerial and operational

resources. In order to achieve and manage growth effectively, we must continue to improve and expand our operational and financial management capabilities. Moreover, we will need to increase staffing and to train, motivate and manage our employees. All of these activities will increase our expenses and may require us to raise additional capital sooner than expected. Failure to manage growth effectively could materially harm our business, financial condition or results of operations.

We may expand our business through the acquisition of rights to new product candidates that could disrupt our business, harm our financial condition and may also dilute current stockholders' ownership interests in our company.

Our business strategy includes expanding our products and capabilities, and we may seek acquisitions of product candidates, antibodies or technologies to do so. Acquisitions involve numerous risks, including substantial cash expenditures; potentially dilutive issuance of equity securities; incurrence of debt and contingent liabilities, some of which may be difficult or impossible to identify at the time of acquisition; difficulties in assimilating acquired technologies or the operations of the acquired companies; diverting our management's attention away from other business concerns; risks of entering markets in which we have limited or no direct experience; and the potential loss of our key employees or key employees of the acquired companies.

We can make no assurances that any acquisition will result in short-term or long-term benefits to us. We may incorrectly judge the value or worth of an acquired product, company or business. In addition, our future success would depend in part on our ability to manage the rapid growth associated with some of these acquisitions. We cannot assure that we will be able to make the combination of our business with that of acquired products, businesses or companies work or be successful. Furthermore, the development or expansion of our business or any acquired products, business or companies may require a substantial capital investment by us. We may not have these necessary funds or they might not be available to us on acceptable terms or at all. We may also seek to raise funds by selling shares of our preferred or common stock, which could dilute each current stockholder's ownership interest in the Company.

Risks Related to Ownership of Our Common Stock

The sale of securities by us in any equity or debt financing could result in dilution to our existing stockholders and have a material adverse effect on our earnings.

We have financed our operations primarily through sales of stock and warrants. It is likely that during the next twelve months we will seek to raise additional capital through the sales of stock and warrants in order to expand our level of operations to continue our research and development efforts.

Any sale of common stock by us in a future offering could result in dilution to our existing stockholders as a direct result of our issuance of additional shares of our capital stock. In addition, our business strategy may include expansion through internal growth or by establishing strategic relationships with targeted customers and vendors. In order to do so, or to finance the cost of our other activities, we may issue additional equity securities that could dilute our stockholders' stock ownership. We may also assume additional debt and incur impairment losses related to goodwill and other tangible assets if we acquire another company and this could negatively impact our earnings and results of operations.

Our Common Stock has been considered a Penny Stock.

For 2017, 2016 and most of 2015, the price of our common stock has traded below $5.00 per share, and therefore has been treated as a penny stock. Penny stocks generally are equity securities with a price of less than $5.00. Penny stock rules require a broker-dealer, prior to a transaction in a penny stock not otherwise exempt from the rules, to deliver a standardized risk disclosure document that provides information about penny stocks and the risks in the penny stock market. The broker-dealer also must provide the customer with current bid and offer quotations for the penny stock, the compensation of the broker-dealer and its salesperson in the transaction, and monthly account statements showing the market value of each penny stock held in the customer's account. The broker-dealer must also make a special written determination that the penny stock is a suitable investment for the purchaser and receive the purchaser's written agreement to the transaction. These requirements may have the effect of reducing the level of trading activity, if any, in the secondary market for a security that becomes subject to the penny stock rules. The additional burdens imposed upon broker-dealers by such requirements may discourage broker-dealers from effecting transactions in our securities, which could severely limit their market price and liquidity of our securities. These requirements may restrict the ability of broker-dealers to sell our common stock and may affect your ability to resell our common stock.

Our common stock is subject to price volatility which could lead to losses by stockholders and potential costly security litigation.

The trading volume of our common stock has been and may continue to be extremely limited and sporadic. We expect the market price of our common stock to fluctuate substantially due to a variety of factors, including market perception of our ability to achieve our planned growth, quarterly operating results of other companies in the same industry, trading volume in our common stock, changes in general conditions in the economy and the financial markets or other developments affecting our competitors or us. This volatility has had a significant effect on the market price of securities issued by many companies for reasons unrelated to their operating performance and could have the same effect on our common stock.

The trading price of our Common Stock may be highly volatile and could fluctuate in response to factors such as:

- actual or anticipated variations in our operating results;
- announcements of developments by us or our competitors;
- the timing of IND and/or BLA approval, the completion and/or results of our clinical trials;
- regulatory actions regarding our products;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures or capital commitments;
- adoption of new accounting standards affecting our industry;
- additions or departures of key personnel;
- introduction of new products by us or our competitors;
- sales of our Common Stock or other securities in the open market; and
- other events or factors, many of which are beyond our control.

The stock market is subject to significant price and volume fluctuations. In the past, following periods of volatility in the market price of a company's securities, securities class action litigation has often been initiated against such a company. Litigation initiated against us, whether or not successful, could result in substantial costs and diversion of our management's attention and our resources, which could harm our business and financial condition.

We do not intend to pay dividends on our common stock, so any returns will be determined by the value of our common stock.

We have never declared or paid any cash dividends on our common stock. For the foreseeable future, it is expected that earnings, if any, generated from our operations will be used to finance the growth of our business, and that no dividends will be paid to holders of our common stock. As a result, the success of an investment in our common stock will depend upon any future appreciation in its value. There is no guarantee that our common stock will appreciate in value.

Certain provisions of our Certificate of Incorporation and Bylaws and Delaware law make it more difficult for a third party to acquire us and make a takeover more difficult to complete, even if such a transaction were in our stockholders' interest.

Provisions of our certificate of incorporation and bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our stock. Among other things, the certificate of incorporation and bylaws:

provide that the authorized number of directors may be changed by resolution of the board of directors;

provide that all vacancies, including newly-created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;

divide the board of directors into three classes;

provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and meet specific requirements as to the form and content of a stockholder's notice;

In addition, we are governed by Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a public Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. A "business combination" includes mergers, asset sales or other transactions resulting in a financial benefit to the stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns, or within three years, did own, 15% or more of the corporation's outstanding voting stock. These provisions may have the effect of delaying, deferring or preventing a change in our control.

Compliance with the reporting requirements of federal securities laws can be expensive.

We are subject to the information and reporting requirements of the Exchange Act and other federal securities laws, and the compliance obligations of the Sarbanes-Oxley Act. The costs of preparing and filing annual and quarterly reports and other information with the Securities and Exchange Commission and furnishing audited reports to stockholders are substantial. In addition, we will incur substantial expenses in connection with the preparation of registration statements and related documents with respect any offerings of our common stock.

Failure to establish and maintain adequate finance infrastructure and accounting systems and controls could impair our ability to comply with the financial reporting and internal controls requirements for publicly traded companies.

As a public company, we operate in an increasingly demanding regulatory environment, including with respect to more complex accounting rules. Company responsibilities required by the Sarbanes-Oxley Act of 2002, as amended, or the Sarbanes-Oxley Act, include establishing and maintaining corporate oversight and adequate internal control over financial reporting and disclosure controls and procedures. Effective internal controls are necessary for us to produce reliable financial reports and are important to help prevent financial fraud.

Our compliance with Section 404 of the Sarbanes-Oxley Act requires that we incur substantial accounting expense and expend significant management efforts. We complied with Section 404 at December 31, 2017 and 2016 and while our testing did not reveal any material weaknesses in our internal controls, subsequent testing by our independent registered public accounting firm may reveal material weaknesses in our internal controls that we would be required to remediate in a timely manner so as to be able to comply with the requirements of Section 404 of the Sarbanes-Oxley Act each year. If we are not able to comply with the requirements of Section 404 of the Sarbanes-Oxley Act in a timely manner each year, we could be subject to sanctions or investigations by the SEC, NYSE American or other regulatory authorities which would require additional financial and management resources and could adversely affect the market price of our common stock. Furthermore, if we cannot provide reliable financial reports or prevent fraud, our business and results of operations could be harmed and investors could lose confidence in our reported financial

information.

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ITEM 1B. UNRESOLVED STAFF COMMENTS.

None.

ITEM 2. PROPERTIES.

We do not own any real property. On June 6, 2017, we entered into an Assignment and Consent Agreement (the "Assignment Agreement") with Relmada Therapeutics, Inc., or Relmada, pursuant to which Relmada transferred its entire lease at 275 Madison Avenue, 7th Floor to us. The lease is for 5,790 square feet and has a term of seven years and three months, with an expiration date of September 6, 2022, with an annual rental rate of $312,660 per year through June 6, 2019 and an annual rate of $341,610 for the remaining period. We are also responsible for certain other costs, such as insurance, taxes, utilities, and maintenance. We issued a letter of credit of $390,825 in connection with the lease and maintained a $390,940 certified deposit as collateral for the letter of credit.

ITEM 3. LEGAL PROCEEDINGS.

From time to time, we may become involved in various lawsuits and legal proceedings, which arise in the ordinary course of business. Litigation is subject to inherent uncertainties, and an adverse result in these or other matters may arise from time to time that may harm business. We are currently not aware of any such legal proceedings or claims that will have, individually or in the aggregate, a material adverse effect on our business, financial condition or operating results.

ITEM 4. MINE SAFETY DISCLOSURES.

Not Applicable.

PART II

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

Market Information

Our common stock is listed for quotation on the NYSE AMERICAN under the symbol "ATNM". The following table sets forth, for the quarters indicated, the high and low sale per share sales prices of our common stock as reported by the NYSE AMERICAN. On March 26, 2014 our common stock commenced trading on the NYSE AMERICAN.

Quarterly Common Stock Price Ranges

Fiscal Year 2017, Quarter Ended:	High	Low
March 31, 2017	$1.58	$0.91
June 30, 2017	$1.55	$1.08
September 30, 2017	$1.22	$0.54
December 31, 2017	$0.76	$0.59

Fiscal Year 2016, Quarter Ended:	High	Low
March 31, 2016	$3.40	$1.74
June 30, 2016	$2.04	$1.63
September 30, 2016	$2.00	$1.33
December 31, 2016	$1.40	$0.86

Fiscal Year 2015, Quarter Ended:	High	Low
March 31, 2015	$6.07	2.45
June 30, 2015	$3.94	2.38
September 30, 2015	$2.69	1.68
December 31, 2016	$3.23	1.71

Holders

As of March 16, 2018, there were 110,198,660 shares of common stock issued and outstanding, which were held by approximately 98 holders of record. There are no shares of preferred stock outstanding. On March 14, 2018, the closing price of our common stock as reported on the NYSE AMERICAN was $0.43 per share.

Registration Rights

On December 21, 2015, Actinium entered into an Investor Rights Agreement (the “Investor Rights Agreement”) with Memorial Sloan Cancer Center (“MSKCC”). Under the terms of the Investor Rights Agreement, MSKCC has agreed to forebear from transferring or otherwise disposing of its approximately 5.7 million Actinium shares (other than pursuant to a piggyback registration as described below) until the start of the Actimab-A Phase 2 clinical study (but, in no event until later than March 31, 2016). Thereafter MSKCC shall be permitted to sell its shares subject to a weekly volume limitation of 150,000 shares (which limit may be increased to up to 250,000 shares per week to the extent any prior weekly allotments were not fully used) and applicable law so long as MSKCC maintains at least 25% of its current shareholding in Actinium through December 31, 2016. Actinium has granted MSKCC piggyback registration rights that would be triggered in the event Actinium were to engage in a public registered offering of its shares for its own account where other shareholders are participating as selling shareholders or where such public registered offering is for the account of other selling shareholders. In addition, following December 31, 2016, Actinium has granted MSKCC unlimited Form S-3 registration rights with respect to its shares. As of December 31, 2017, MSKCC owned 1,230,954 shares of our common stock.

Dividends

We have never declared or paid a cash dividend. Any future decisions regarding dividends are made by our Board of Directors. We currently intend to retain and use any future earnings for the development and expansion of our business and do not anticipate paying any cash dividends in the foreseeable future. Our Board of Directors has complete discretion on whether to pay dividends. Even if our Board of Directors decides to pay dividends, the form, frequency and amount will depend upon our future operations and earnings, capital requirements and surplus, general financial condition, contractual restrictions and other factors that the Board of Directors may deem relevant.

Securities Authorized for Issuance under Equity Compensation Plans

The Company currently has two equity compensation plans defined as follows:

In December 2013, our shareholders approved the Company's 2013 Stock Plan. The expiration date of the plan is September 9, 2023 and the total number of underlying shares of the Company's common stock available for grant to employees, directors and consultants of the Company under the plan is currently 17,750,000 shares.

In December 2013, our shareholders approved the Company's 2013 Equity Incentive Plan. The expiration date of the plan is September 9, 2023 and the total number of shares of our common stock available for grant to employees, directors and consultants of us under the plan is 1,000,000 shares.

The following table indicates shares of common stock authorized for issuance under our equity compensation plans as of December 31, 2017:

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance
Equity compensation plans approved by security holders	5,174,592	$ 2.83	12,973,744

Equity compensation plans not approved by security holders	-		-	-
Total	5,174,592	$	2.83	12,973,744

ITEM 6. SELECTED FINANCIAL DATA.

The following selected financial data should be read in conjunction with our consolidated financial statements and related notes and the "Management's Discussion and Analysis of Financial Condition and Results of Operations" and other financial data included elsewhere in this Form 10-K. The selected statements of operations and the selected balance sheet data are derived from our consolidated audited financial statements.

	Year Ended December 31,				
	2017	2016	2015	2014	2013
Statements of Operations Data:					
Revenues	$-	$-	$-	$-	$-
Loss from operations	$(26,910,788)	$(26,847,481)	$(24,829,764)	$(22,480,544)	$(6,591,892)
Net loss	$(26,601,235)	$(24,321,724)	$(21,025,314)	$(24,687,509)	$(10,773,792)
Net loss per common share:					
Basic and diluted	$(0.40)	$(0.50)	$(0.55)	$(0.90)	$(0.47)
Weighted-average common shares outstanding:					
Basic and diluted	66,746,389	48,463,268	38,158,480	27,363,748	22,752,752

	As of December 31,				
	2017	2016	2015	2014	2013
Balance Sheet Data:					
Cash and cash equivalents	$17,399,636	$20,519,294	$25,643,273	$6,706,802	$5,533,366
Total assets	$18,337,107	$22,528,886	$26,587,581	$7,569,086	$5,765,675
Total liabilities	$4,666,004	$4,520,557	$4,613,533	$9,491,616	$7,325,220
Stockholders' equity (deficit)	$13,671,103	$18,008,329	$21,974,048	$(1,922,530)	$(1,559,545)

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

The information and financial data discussed below is derived from the audited consolidated financial statements of Actinium Pharmaceuticals, Inc. for its fiscal years ended December 31, 2017, 2016 and 2015. The consolidated financial statements of Actinium Pharmaceuticals, Inc. were prepared and presented in accordance with generally accepted accounting principles in the United States. The information and financial data discussed below is only a summary and should be read in conjunction with the historical financial statements and related notes of Actinium Pharmaceuticals, Inc. contained elsewhere in this Report. The financial statements contained elsewhere in this Report fully represent Actinium Pharmaceuticals, Inc.'s financial condition and operations; however, they are not indicative of the Company's future performance. See "Cautionary Note Regarding Forward Looking Statements" above for a discussion of forward-looking statements and the significance of such statements in the context of this Report.

Actinium Pharmaceuticals Inc. is a clinical-stage biopharmaceutical company focused on developing and potentially commercializing targeted therapies for improved myeloablation and conditioning of the bone marrow prior to a bone marrow transplant and for the targeting and killing of cancer cells. Our targeted therapies are Antibody Radio-Conjugates, or ARC, that combine the targeting ability of monoclonal antibodies ("mAb") with the cell-killing ability of radioisotopes. Our ARC's have demonstrated the ability to improve access to bone marrow transplants with the potential for better outcomes, namely increased marrow engraftment and survival. Our product pipeline consists of two ARC product candidates that are currently being studied in three clinical trials with two additional clinical trials expected to begin patient enrollment in 2018. In each of the indications, we believe our product candidates are either first in class or have best in class potential. Our lead myeloablation product candidate, Iomab-B, is currently being studied in a pivotal Phase 3 trial as a conditioning agent in older patients with relapsed or refractory ("r/r") Acute Myeloid Leukemia AML ("AML") who are ineligible for a bone marrow transplant as they cannot withstand chemotherapy-based conditioning. Iomab-B is an ARC that is comprised of the anti-CD45 mAb apamistamab and the radioisotope iodine-131 (^{131}I") Our CD33 program trials include; the ongoing Phase 2 Actimab-A trial for patients newly diagnosed with AML over the age of 60, the Phase 1 Actimab-M trial for patients with refractory multiple myeloma, the planned Phase 2 Actimab-MDS trial for patients with high-risk myelodysplastic syndrome ("MDS") with a p53 genetic mutation and the Phase 1 Actimab-A & CLAG-M trial for patients with r/r AML. These trials are studying our ARC drug candidate comprised of the anti-CD33 mAb lintuzumab and the radioisotope actinium-225 (^{225}Ac"). In addition, we are developing our Actinium Warhead Enabling, or AWE, Technology Platform to leverage our intellectual property and know-how to create additional ARC drug candidates by labeling ^{225}Ac to targeting moieties that we will either progress in clinical trials ourselves or out-license.

Bone marrow is semi-solid tissue found within the spongy section of bones that produces new blood cells in a process called hematopoiesis. Bone marrow contains hematopoietic stem cells which give rise to the three classes of blood cells that are found in circulation: red blood cells and platelets that are responsible for blood function and white blood cells that are responsible for immune system function. A bone marrow transplant may be the only potentially curative treatment option, or the best treatment option, for patients with blood cancers such as leukemias, lymphomas and multiple myeloma, or benign blood, or marrow disorders such as inherited immune system disorders, sickle cell disease and severe aplastic anemia.

In order to receive a bone marrow transplant, ("BMT"), patients are administered treatment to ablate or destroy their bone marrow in a process referred to as myeloablation. Myeloablative treatments typically consist of chemotherapy and external radiation, which is also called total body radiation. As an alternative to myeloablation, the bone marrow may also be conditioned or prepared for a transplant via lower intensity treatment know as reduced intensity conditioning, which uses lower doses of external radiation and less toxic types of chemotherapy. Patients with blood cancers must ideally be disease–free, or at least in remission, before receiving myeloablative or conditioning therapy. Myeloablative treatments are associated with greater and more severe toxicities, including higher treatment related mortality rates, and may be too intense for patients, particularly those of advanced age, to tolerate as compared to reduced intensity conditioning. Reduced intensity conditioning is generally better tolerated by patients but is associated with higher rates of relapse, which can reduce overall survival. Our ARC based approach is designed to target blood cancer and bone marrow cells via a mAb and deliver potent radioisotope payloads directly to those cells to achieve myeloablation without systemic toxicities. In doing so, we hope to improve access to BMT for a greater number of patients while improving outcomes through improved myeloablation via our ARC technologies.

We have licensed our product candidates and ARC technologies from the Fred Hutchinson Cancer Research Center and the Memorial Sloan Kettering Cancer Center. These licenses include rights to certain patents and we own outright patents pertaining to our product candidates and AWE technology platform. Our intellectual property portfolio consists of 68 issued and pending patent applications that we have licensed or fully own. We have compiled scientific and medical advisory boards of thought-leading physicians in their respective fields to advise and guide us though the development process of our pipeline product candidates.

We have also developed proprietary know-how related to the development, manufacturing and supply chain required for our product candidates. We supply our product candidates to clinical trial sites on a just in time basis through the management of the manufacturing our drug product components, final drug product and the distribution of our final drug product to medical centers where our trials are conducted. In the case of Iomab-B, we calculate, produce and supply personalized doses of our clinical trial. We have secured access to ^{131}I produced by two premier commercial global suppliers. We project that these two suppliers have sufficient ^{131}I production capacity to meet our commercial needs for the Iomab-B program. We have secured access to ^{225}Ac through a renewable contractual arrangement with the United States Department of Energy, or DOE. We project that these quantities are sufficient to support early stages of commercialization of actinium isotope-based products and that the DOE's accelerator route of production of ^{225}Ac has the potential to provide commercial quantities of ^{225}Ac. We have also developed our own proprietary process for industrial-scale ^{225}Ac production in a cyclotron in quantities adequate to support full product commercialization.

On March 26, 2014, we began trading our common stock on the NYSE AMERICAN market.

Plan of Operation

Our current operations are primarily focused on furthering the development of our clinical drug candidates for myeloablation, our CD33 program drug candidates, supporting investigator initiated clinical trials that use our product candidates and leveraging our AWE platform to create new clinical programs and contribute to collaborations.

Operations related to Iomab-B include progressing the ongoing multi-center Phase 3 pivotal trial (a trial that leads to registration trial marketing approved by the FDA), which includes investigator engagement, site activation and supporting patient enrollment. In addition, we are focused on commercial-scale manufacturing of apamistamab suitable for an approval trial and preparation of appropriate regulatory submissions. We are also focused on producing final Iomab-B drug product material that consists of apamistamab labelled with the isotope ^{131}I. Operations related to our planned Phase 2 Actimab-MDS trial include preparation for appropriate regulatory submissions, protocol development and investigator engagement.

In the case of our CD33 program, key ongoing activities include progressing the multi-center Phase 2 Actimab-A trial, the Phase 1 Actimab-M trial and planned Phase 1 Actimab-A and CLAG-M combination trial, managing isotope and other materials, supply chain and managing the manufacturing of the finished drug candidate product.

We have primarily management position employees and consultants who direct, organize and monitor the activities described above through contractors. We also made clinical trial arrangements with other well-known cancer centers. Our Iomab-B and CD33 ARCs and their components are contract-manufactured and maintained under our supervision by specialized contract manufacturers and suppliers in the United States.

We have never generated revenue. Currently we do not have a recurring source of revenues to cover our operating costs. As of December 31, 2017 and 2016, our accumulated deficit was $163.2 million and $136.6 million, respectively. Our net loss was $26.6 million, $24.3 million, and $21.0 million for the years ended December 31, 2017, 2016, and 2015, respectively. As of December 31, 2017, our cash balance was $17.4 million. We believe that we have enough cash on hand to fund our operations through the next 12 months.

Opportunities, Challenges and Risks

The market for drugs for cancer treatment is a large market in need of novel products, in which successful products can command multibillion dollars in annual sales. A number of large pharmaceutical and biotechnology companies

regularly acquire products in development, with preference given to products in Phase 2 or later clinical trials. These transactions are typically structured to include an upfront payment that ranges from several million dollars to tens of million dollars or more and additional milestone payments tied to regulatory submissions and approvals and sales milestones. Our goal is to develop our product candidates through Phase 2 clinical trials and enter into partnership agreements with one or more large pharmaceutical and/or biotechnology companies.

We believe our future success will be heavily dependent upon our ability to successfully conduct clinical trials and preclinical development of our drug candidates. In addition, we plan to continue and expand other research and clinical trial collaborations. Moreover, we will have to maintain sufficient supply of ^{225}Ac and successfully maintain and if and when needed replenish or obtain our reserves of monoclonal antibodies. We will have to maintain and improve manufacturing procedures we have developed for production of our drug candidates from the components that include the ^{131}I and ^{225}Ac isotopes, monoclonal antibodies and other materials. It is possible that despite our best efforts our clinical trials results may not meet regulatory requirements for approval. If our efforts are successful, we will be able to partner our development stage products on commercially favorable terms only if they enjoy appropriate patent coverage and/or considerable know-how and other protection that ensures market exclusivity. For that reason, we intend to continue our efforts to maintain existing and generate new intellectual property. Intellectual property is a key factor in the success of our business as well as market exclusivity.

To achieve our goal, we intend to continue to invest in research and development at high and constantly increasing rates, thus incurring further losses until one or more of our products are sufficiently developed to partner them with a large pharmaceutical and/or biotechnology company.

Results of Operations – Year Ended December 31, 2017 Compared to the Year Ended December 31, 2016

The following table sets forth, for the periods indicated, data derived from our statements of operations:

	For the year ended December 31,		**Increase**
	2017	2016	(Decrease)
Revenues	$-	$-	$-
Operating expenses:			
Research and development, net of reimbursements	17,699,503	17,786,655	(87,152)
General and administrative	9,155,347	8,983,303	172,044
Depreciation and amortization	55,938	77,523	(21,585)
Total operating expenses	26,910,788	26,847,481	63,307
Other income (expense)			
Interest income (expense)	5,430	(5,007)	10,437
Gain on change in fair value of derivative liabilities	304,123	2,530,764	(2,226,641)
Total other income (expense)	309,553	2,525,757	(2,216,204)
Net loss	$(26,601,235)	$(24,321,724)	$(2,279,511)

Revenues

We recorded no commercial revenues for the years ended December 31, 2017 and 2016.

Research and Development Expense

Research and development expenses declined $0.1 million to $17.7 million for the year ended December 31, 2017 compared to $17.8 million for the year ended December 31, 2016. The slight decrease was primarily attributable to the higher expenses in 2016 resulting from start-up costs for a Phase 2 trial for Actimab-A and closing costs associated with a Phase 1 trial of Actimab A, mostly offset by higher expenses related to Iomab-B. We expect to incur fluctuating research and development expenses in the future that are most correlated with clinical trial enrollment.

General and Administrative Expenses

General and administrative expenses increased by $0.2 million to $9.2 million for the year ended December 31, 2017 compared to $9.0 million for the year ended December 31, 2016, primarily as a result of one-time charges paid to certain former employees and higher professional fees.

Other Income

Other income was $0.3 million and $2.5 million for the years ended December 31, 2017 and 2016, respectively. The decline is attributable to the fluctuation of our stock price and its impact on the derivative value of certain warrants we issued in connection with the December 2012 financing.

Net Loss

Net loss increased by approximately $2.3 million to $26.6 million for the year ended December 31, 2017 compared to approximately $24.3 million for the year ended December 31, 2016. The increase was primarily due to one-time charges paid to certain former employees and the decrease in noncash other income, resulting from the lower gain on the change in fair value of our derivative warrant liabilities.

Results of Operations – Year Ended December 31, 2016 Compared to the Year Ended December 31, 2015

The following table sets forth, for the periods indicated, data derived from our statements of operations:

	For the year ended December 31,		**Increase**
	2016	2015	(Decrease)
Revenues	$-	$-	$-
Operating expenses:			
Research and development, net of reimbursements	17,786,655	13,501,895	4,284,760

General and administrative	8,983,303	11,274,404	(2,291,101)
Depreciation and amortization	77,523	53,465	24,058
Total operating expenses	26,847,481	24,829,764	2,017,717
Other income (expense)			
Interest expense	(5,007)	(7,868)	2,861
Gain on change in fair value of derivative liabilities	2,530,764	3,812,318	(1,281,554)
Total other income (expense)	2,525,757	3,804,450	(1,278,693)
Net loss	$(24,321,724)	$(21,025,314)	$(3,296,410)

Revenues

We recorded no commercial revenues for the years ended December 31, 2016 and 2015.

Research and Development Expense

Research and development expenses, increased by $4.3 million to $17.8 million for the year ended December 31, 2016 compared to $13.5 million for the year ended December 31, 2015. The increase was primarily attributable to an increase in Actimab-A costs of $3.1 million. In addition, there was an increase in compensation cost of $1.3 million as a result of an increase in research and development personnel.

General and Administrative Expenses

General and administrative expenses decreased by $2.3 million to $9.0 million for the year ended December 31, 2016 compared to $11.3 million for the year ended December 31, 2015. The decrease was largely attributable to a decrease of $2.5 million for stock-based compensation, a decrease of $0.6 million for financial consulting and investor relations service fees, and a decrease of $0.4 million for legal fees, partially offset by an increase in payroll expenses of $0.5 million, an increase in marketing expense of $0.2 million and an increase in rent expense of $0.1 million.

Other Income

Other income was $2.5 million and $3.8 million for the years ended December 31, 2016 and 2015, respectively. The change is mainly attributable to the fluctuation of our stock price and its impact on the derivative value of certain warrants we issued in connection with the December 2012 financing.

Net Loss

Net loss increased by $3.3 million to $24.3 million for the year ended December 31, 2016 compared to $21.0 million for the year ended December 31, 2015. The increase was primarily due to one-time charges paid to certain former employees and a lower gain on the change in fair value of our warrant liabilities and a decrease in general and administrative expenses which were partially offset by additional research and development expense.

Liquidity and Capital Resources

We have financed our operations primarily through sales of our stock and warrants.

The following tables sets forth selected cash flow information for the periods indicated:

	For the year ended December 31,

	2017	2016	2015
Cash used in operating activities	$(21,553,346)	$(20,789,237)	$(18,543,768)
Cash used in investing activities	(380,946)	(109,819)	(47,788)
Cash provided by financing activities	18,814,634	15,775,077	37,528,027
Net change in cash	$(3,119,658)	$(5,123,979)	$18,936,471

For the years ended December 31, 2017 and 2016

Net cash used in operating activities was $21.6 million for the year ended December 31, 2017 compared to $20.8 million used in operations for the year ended December 31, 2016, increasing due to activity from our clinical trials and one-time charges paid to certain former employees.

Net cash used in investing activities was $0.4 million for the year ended December 31, 2017, which included an initial security deposit related to the lease of offices in New York. Net cash used in investing activities was $0.1 million for the year ended December 31, 2016, which included a security deposit related to the lease of furniture for offices in New York.

Net cash provided by financing activities was $18.8 million and $15.8 million for the years ended December 31, 2017 and 2016, respectively. During 2017, we issued common stock and received net proceeds of $18.8 million. During 2016, we issued common stock and received net proceeds of approximately $16.0 million.

For the years ended December 31, 2016 and 2015

Net cash used in operating activities was $20.8 million for the year ended December 31, 2016 compared to $18.5 million used in operations for the year ended December 31, 2015. Cash used in operations increased due to higher spending related to the preparations for and eventual launch and conduct of a multicenter clinical trial, higher professional fees and higher payroll-related expenses.

Net cash used in investing activities was $0.1 million for the year ended December 31, 2016 compared to $48,000 used in investing activities for the year ended December 31, 2015. Cash used in investing activities increased for additional computers and lab equipment purchases as required by new employees during 2016 compared to the prior year.

Net cash provided by financing activities was $15.8 million and $37.5 million for the years ended December 31, 2016 and 2015, respectively. During 2016, we issued common stock and received net proceeds of $16.0 million. During 2015, we issued common stock and received net proceeds of $37.6 million.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that have or are reasonably likely to have a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that is material to investors.

Seasonality

We do not have a seasonal business cycle. Our operating results are generally derived evenly throughout the calendar year.

Critical Accounting Policies

Our financial statements have been prepared in accordance with accounting principles generally accepted in the United States. To prepare these financial statements, we must make estimates and assumptions that affect the reported amounts of assets and liabilities. These estimates also affect our expenses. Judgments must also be made about the disclosure of contingent liabilities. Actual results could be significantly different from these estimates. We believe that the following discussion addresses the accounting policies that are necessary to understand and evaluate our reported financial results.

Derivatives

All derivatives are recorded at fair value and recorded on the balance sheet. Fair values for securities traded in the open market and derivatives are based on quoted market prices. Where market prices are not readily available, fair values are determined using market-based pricing models incorporating readily observable market data and requiring judgment and estimates.

Fair Value of Financial Instruments

Fair value is defined as the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants. A fair value hierarchy has been established for valuation inputs that gives the highest priority to quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. The fair value hierarchy is as follows:

Level 1 Inputs – Unadjusted quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date.

Level 2 Inputs – Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. These might include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable for the asset or liability (such as interest rates, volatilities, prepayment speeds, credit risks, etc.) or inputs that are derived principally from or corroborated by market data by correlation or other means.

Level 3 Inputs – Unobservable inputs for determining the fair values of assets or liabilities that reflect an entity’s own assumptions about the assumptions that market participants would use in pricing the assets or liabilities.

Income Taxes

We use the asset and liability method to calculate deferred taxes. Deferred taxes are recognized based on the differences between the financial reporting and income tax bases of assets and liabilities using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. We review deferred tax assets for a valuation allowance based upon whether it is more likely than not that the deferred tax asset will be fully realized. A valuation allowance, if necessary, is provided against deferred tax assets, based upon our assessment as to their realization.

We recognize tax when the positions meet a “more-likely-than-not” recognition threshold. There were no tax positions for which it is considered reasonably possible that the total amounts of unrecognized tax benefits will significantly increase or decrease within the next year. We recognize interest related to unrecognized tax benefits in interest expense and penalties in operating expenses.

Research and Development Costs

Research and development costs are expensed as incurred. Research and development reimbursements and grants are recorded by the Company as a reduction of research and development costs.

Share-Based Payments

We estimate the fair value of each stock option award at the grant date by using the Black-Scholes option pricing model and common shares based on the market price of the Company's common stock on the date of the share grant. The fair value determined represents the cost for the award and is recognized over the vesting period during which an employee is required to provide service in exchange for the award. We adopted new accounting guidance, effective January 1, 2017, with respect to stock-based compensation and related income tax aspects, and now account for forfeitures as they occur, rather than using an estimated forfeiture rate. The adoption did not have a material impact on our consolidated financial statements.

Recent Accounting Pronouncements

In February 2016, FASB issued ASU No. 2016-02 "Leases" (Topic 842), which creates new accounting and reporting guidelines for leasing arrangements. The new guidance requires organizations that lease assets to recognize assets and liabilities on the balance sheet related to the rights and obligations created by those leases, regardless of whether they are classified as finance or operating leases. Consistent with current guidance, the recognition, measurement, and presentation of expenses and cash flows arising from a lease primarily will depend on its classification as a finance or operating lease. The guidance also requires new disclosures to help financial statement users better understand the amount, timing, and uncertainty of cash flows arising from leases. The new standard is effective for annual reporting periods beginning after December 15, 2018, including interim periods within that reporting period, with early application permitted. The new standard is to be applied using a modified retrospective approach. We are currently evaluating the impact of the new pronouncement on its financial statements.

In April 2016, the FASB issued ASU No. 2016-10, "Revenue from Contracts with Customers: Identifying Performance Obligations and Licensing (Topic 606)". In March 2016, the FASB issued ASU No. 2016-08, "Revenue from Contracts with Customers: Principal versus Agent Considerations (Reporting Revenue Gross verses Net) (Topic 606)". These amendments provide additional clarification and implementation guidance on the previously issued ASU 2014-09, "Revenue from Contracts with Customers". The amendments in ASU 2016-10 provide clarifying guidance on materiality of performance obligations; evaluating distinct performance obligations; treatment of shipping and handling costs; and determining whether an entity's promise to grant a license provides a customer with either a right to use an entity's intellectual property or a right to access an entity's intellectual property. The amendments in ASU 2016-08 clarify how an entity should identify the specified good or service for the principal versus agent evaluation and how it should apply the control principle to certain types of arrangements. The adoption of ASU 2016-10 and ASU 2016-08 is to coincide with an entity's adoption of ASU 2014-09, which we intend to adopt for interim and annual reporting periods beginning after December 15, 2017. We are in the process of evaluating the standard and do not expect the adoption will have a material effect on its consolidated financial statements and disclosures.

In May 2016, the FASB issued ASU No. 2016-12, “Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients”, which narrowly amended the revenue recognition guidance regarding collectability, noncash consideration, presentation of sales tax and transition and is effective during the same period as ASU 2014-09. We are currently evaluating the standard and does not expect the adoption will have a material effect on its consolidated financial statements and disclosures. We are in the process of performing an initial review of custom contracts to determine the impact that ASU 2014-09 and its subsequent updates will have our condensed consolidated financial statements or financial statement disclosures upon adoption. Based on this preliminary review, we believe that the timing and measurement of revenue for these customers will be similar to the current revenue recognition. However, this view is preliminary and could change based on the detailed analysis associated with the conversion and implementation phases of ASU 2014-09. We intend to utilize the transition method, retrospectively adopting with the cumulative effect of initially applying the standard at the date of initial application.

We do not believe that any recently issued, but not yet effective accounting pronouncements, when adopted, will have a material effect on the consolidated financial statements.

Subsequent Event

On March 6 and March 9, 2018, we completed a rights offering pursuant to an effective registration statement on Form S-3, as amended (Registration Statement No. 333-216748), previously filed with and declared effective by the Securities and Exchange Commission, or the SEC, and a prospectus and prospectus supplements filed with the SEC, or the Rights Offering. Pursuant to the Rights Offering, we sold an aggregate of 30,125,326 units consisting of an aggregate of 30,125,326 shares of common stock, 7,531,304 series A warrants and 22,593,967 series B warrants, with each series A warrant exercisable for one share of Common Stock at an exercise price of $0.60 per share and each series B warrant exercisable for one share of Common Stock at an exercise price of $0.70 per share, resulting in gross proceeds to us of approximately $15.1 million, and net proceeds of approximately $13.9 million after deducting expenses relating to dealer-manager fees and expenses, and excluding any proceeds received upon exercise of any warrants.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Interest rate risk

Our cash and cash equivalents include all highly liquid investments with an original maturity of three months or less. Because of the short-term maturities of our cash and cash equivalents, we do not believe that an increase in market rates would have a significant impact on the realized value of our investments. We place our cash and cash equivalents on deposit with financial institutions in the United States. The Federal Deposit Insurance Corporation covers $0.2 million for substantially all depository accounts. We had amounts on deposit in excess of the insured limits for the years ending December 31, 2017, 2016 and 2015, respectively.

Foreign currency exchange risk

We currently have limited, but may in the future have increased, clinical and commercial manufacturing agreements which are denominated in Euros or other foreign currencies. As a result, our financial results could be affected by factors such as a change in the foreign currency exchange rate between the U.S. dollar and the Euro or other applicable currencies, or by weak economic conditions in Europe or elsewhere in the world. We are not currently engaged in any foreign currency hedging activities.

Market indexed security risk

We have issued derivative warrants to various holders underlying shares of our common stock. These warrant investments are re-measured to their fair value at each reporting period with changes in their fair value recorded as derivative gain (loss) in the accompanying consolidated statement of operations. We use a binomial valuation model for valuation of the derivative warrants.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA.

REPORT OF MANAGEMENT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Actinium Pharmaceuticals, Inc. ("Actinium") is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) or 15d-15(f) under the Securities Exchange Act of 1934. Actinium's internal control system was designed to provide reasonable assurance to the company's management and Board of Directors regarding the preparation and fair presentation of published financial statements.

Actinium management assessed the effectiveness of the company's internal control over financial reporting as of December 31, 2017. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in Internal Control – Integrated Framework (2013 framework). Based on its assessment, Actinium management believes that, as of December 31, 2017, the Company's internal control over financial reporting is effective based on those criteria.

GBH CPAs, PC, the independent registered public accounting firm that audited the financial statements included in this Annual Report, has issued an attestation report on the company's internal control over financial reporting.

/s/ Sandesh Seth

Sandesh Seth

Chairman and Chief Executive Officer

March 16, 2018

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of

Actinium Pharmaceuticals, Inc.

New York, New York

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Actinium Pharmaceutical, Inc. (the "Company") as of December 31, 2017, based on criteria established in Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control—Integrated Framework (2013) issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated financial statements as of and for the year ended December 31, 2017, of the Company and our report dated March 16, 2018, expressed an unqualified opinion on those financial statements

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Report of Management on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing

and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ GBH CPAs, PC

GBH CPAs, PC

www.gbhcpas.com

Houston, Texas

March 16, 2018

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of

Actinium Pharmaceuticals, Inc.

New York, New York

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Actinium Pharmaceuticals, Inc. (the "Company") as of December 31, 2017 and 2016, the related consolidated statements of operations, changes in stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2017, including the related notes (collectively referred to as the "financial statements").

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 16, 2018, expressed an unqualified opinion on the Company's internal control over financial reporting.

In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2017, in conformity with accounting principles generally accepted in the United States of America.

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 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. 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/ GBH CPAs, PC

We have served as the Company’s auditor since 2012.

GBH CPAs, PC

www.gbhcpas.com

Houston, Texas

March 16, 2018

Actinium Pharmaceuticals, Inc.

Consolidated Balance Sheets

	December 31, 2017	December 31, 2016
Assets		
Current Assets:		
Cash and cash equivalents	$17,399,636	$20,519,294
Restricted cash – current	-	34,733
Prepaid expenses and other current assets	439,322	1,836,451
Total Current Assets	17,838,958	22,390,478
Property and equipment, net of accumulated depreciation	57,350	88,549
Security deposit	49,859	49,859
Restricted cash	390,940	-
Total Assets	$18,337,107	$22,528,886
Liabilities and Stockholders' Equity		
Current Liabilities:		
Accounts payable and accrued expenses	$4,625,088	$4,194,874
Accounts payable and accrued expenses - related parties	25,000	25,000
Derivative liabilities	15,916	300,683
Total Current Liabilities	4,666,004	4,520,557
Total Liabilities	4,666,004	4,520,557
Commitments and contingencies		
Stockholders' Equity:		
Preferred stock, $0.001 par value; 50,000,000 shares authorized, 0 shares issued and outstanding	-	-
Common stock, $0.001 par value; 400,000,000 shares authorized; 80,072,334 and 55,801,742 shares issued and outstanding, respectively	80,072	55,802
Additional paid-in capital	176,744,068	154,504,329
Accumulated deficit	(163,153,037)	(136,551,802)
Total Stockholders' Equity	13,671,103	18,008,329
Total Liabilities and Stockholders' Equity	$18,337,107	$22,528,886

See accompanying notes to the consolidated financial statements.

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Actinium Pharmaceuticals, Inc.

Consolidated Statements of Operations

	For the Year Ended December 31,		
	2017	2016	2015
Revenue	$-	$-	$-
Operating expenses:			
Research and development, net of reimbursements	17,699,503	17,786,655	13,501,895
General and administrative	9,155,347	8,983,303	11,274,404
Depreciation expense	55,938	77,523	53,465
Total operating expenses	26,910,788	26,847,481	24,829,764
Loss from operations	(26,910,788)	(26,847,481)	(24,829,764)
Other income (expense):			
Interest income (expense)	5,430	(5,007)	(7,868)
Gain on change in fair value of derivative liabilities	304,123	2,530,764	3,812,318
Total other income (expense)	309,553	2,525,757	3,804,450
Net loss	$(26,601,235)	$(24,321,724)	$(21,025,314)
Net loss per common share - basic and diluted	$(0.40)	$(0.50)	$(0.55)
Weighted average common shares outstanding - basic and diluted	66,746,389	48,463,268	38,158,480

See accompanying notes to the consolidated financial statements.

Actinium Pharmaceuticals, Inc.

Consolidated Statement of Changes in Stockholders' Equity (Deficit)

For the Years Ended December 31, 2017, 2016 and 2015

	Common Stock		Additional Paid-In	Accumulated	Stockholders' Equity
	Shares	Amount	Capital	Deficit	(Deficit)
Balance, January 1, 2015	29,971,839	$29,972	$89,252,262	$(91,204,764)	$(1,922,530)
Stock-based compensation	344,784	345	7,061,277	-	7,061,622
Proceeds from the sale of common stock and warrants, net of offering costs	11,993,641	11,994	37,625,965	-	37,637,959
Issuance of common stock from exercise of options	20,000	20	15,660	-	15,680
Issuance of common stock from exercise of warrants	1,736,277	1,736	156,204	-	157,940
Transfer of warrant derivatives from liability to equity classification	-	-	48,691	-	48,691
Net loss	-	-	-	(21,025,314)	(21,025,314)
Balance, December 31, 2015	44,066,541	44,067	134,160,059	(112,230,078)	21,974,048
Stock-based compensation	81,700	82	4,297,696	-	4,297,778
Proceeds from the sale of common stock and warrants, net of offering costs	11,504,427	11,504	16,011,163	-	16,022,667
Issuance of common stock from exercise of options	23,212	23	18,082	-	18,105
Issuance of common stock from exercise of warrants	125,862	126	(126)	-	-
Transfer of warrant derivatives from liability to equity classification	-	-	17,455	-	17,455
Net loss	-	-	-	(24,321,724)	(24,321,724)
Balance, December 31, 2016	55,801,742	55,802	154,504,329	(136,551,802)	18,008,329
Stock-based compensation	93,385	93	3,474,282	-	3,474,375
Proceeds from the sale of common stock and warrants, net of offering costs	24,172,973	24,173	18,765,461	-	18,789,634
Issuance of common stock from exercise of warrants	4,234	4	(4)	-	-
Net loss	-	-	-	(26,601,235)	(26,601,235)
Balance, December 31, 2017	80,072,334	$80,072	$176,744,068	$(163,153,037)	$13,671,103

See accompanying notes to the consolidated financial statements.

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Actinium Pharmaceuticals, Inc.

Consolidated Statements of Cash Flows

	For the Year Ended December 31,		
	2017	2016	2015
Cash Flows From Operating Activities:			
Net loss	$(26,601,235)	$(24,321,724)	$(21,025,314)
Adjustments to reconcile net loss to net cash used in operating activities:			
Stock-based compensation expense	3,493,731	4,297,778	7,061,622
Depreciation expense	55,938	77,523	53,465
Gain on change in fair value of derivative liabilities	(304,123)	(2,530,764)	(3,812,318)
Changes in operating assets and liabilities:			
(Increase) decrease in:			
Prepaid expenses and other current assets	1,397,129	(1,032,988)	162,083
Increase (decrease) in:			
Accounts payable and accrued expenses	405,214	2,720,938	(793,949)
Accounts payable and accrued expenses - related party	-	-	(189,357)
Net Cash Used In Operating Activities	(21,553,346)	(20,789,237)	(18,543,768)
Cash Flows From Investing Activities:			
Payment of security deposit	-	(49,859)	-
Restricted cash	(356,207)	-	-
Purchase of property and equipment	(24,739)	(59,960)	(47,788)
Net Cash Used In Investing Activities	(380,946)	(109,819)	(47,788)
Cash Flows From Financing Activities:			
Payments on note payable	-	(265,695)	(283,552)
Sales of shares of common stock, net of offering costs	18,814,634	16,022,667	37,637,959
Proceeds from the exercise of stock options	-	18,105	15,680
Proceeds from the exercise of warrants	-	-	157,940
Net Cash Provided By Financing Activities	18,814,634	15,775,077	37,528,027
Net change in cash	(3,119,658)	(5,123,979)	18,936,471
Cash at beginning of year	20,519,294	25,643,273	6,706,802
Cash at end of year	$17,399,636	$20,519,294	$25,643,273
Supplemental disclosures of cash flow information:			
Cash paid for interest	$-	$5,007	$7,868
Cash paid for taxes	$-	$-	$-
Supplemental disclosure of non-cash investing and financing activities:			
	$25,000	$-	$-

Stock issuance costs included in accounts payable and accrued expenses			
Insurance prepaid through premium finance	$-	$-	$265,695
Fair value of warrants issued with stock	$-	$-	$4,738,161
Transfer from derivative liability classification to equity classification	$-	$17,455	$48,691

See accompanying notes to the consolidated financial statements.

Actinium Pharmaceuticals, Inc.

Notes to Consolidated Financial Statements

Note 1 - Description of Business and Summary of Significant Accounting Policies

Nature of Business - Actinium Pharmaceuticals, Inc. (the "Company", "Actinium", or "We") is a clinical-stage biopharmaceutical company focused on developing and potentially commercializing targeted therapies for improved myeloablation and conditioning of the bone marrow prior to a bone marrow transplant and for the targeting and killing of cancer cells. The Company is currently conducting clinical trials for two antibody radio-conjugate ("ARC") clinical trial product candidate as well as performing research on other potential drug candidates utilizing its proprietary AWE technology platform. The Company's most advanced product candidate, Iomab-B, is comprised of the anti-CD45 monoclonal antibody, apamistamab, labeled with iodine-131 ("^{131}I"). The Company is currently conducting a pivotal Phase 3 trial of Iomab-B for myeloablation and conditioning of the bone marrow prior to a bone marrow transplant for patients with relapsed or refractory acute myeloid leukemia ("AML") age 55 and older. Upon successful completion of the Phase 3 clinical trial for Iomab-B the Company intends to submit for marketing approval in the U.S. and European Union.

Actinium's CD33 program drug candidates consist of the anti-CD33 monoclonal antibody lintuzumab conjugated with the alpha-particle actinium-225 ("^{225}Ac"). The most advanced CD33 program trial is an Actimab-A Phase 2 clinical trial for patients over the age of 60 who are newly diagnosed with AML and ineligible for intensive chemotherapy. The Company is also conducting a Phase 1 Actimab-M trial for lintuzumab-^{225}Ac for patients with refractory multiple myeloma. The Company is planning a Phase 2 clinical trial for patients with high-risk MDS and a Phase 1 trial for patients with relapsed or refractory ("r/r") AML in combination with the chemotherapy regimen CLAG-M that are expected to begin patient enrollment in 2018. The Company is also developing its AWE Technology Platform with the goal of generating additional drug candidates that will progress in clinical trials and/or out-license. The Company intends to develop a number of products for numerous types of cancer and derive revenue from partnering relationships worldwide and/or direct sales of products primarily in the United States.

The Company is presently conducting the SIERRA trial (Study of Iomab-B in Elderly Relapsed or Refractory Acute Myeloid Leukemia). Assuming this pivotal Phase 3 clinical trial for Iomab-B meets its primary point, it will form the basis for a Biologics Licensing Application ("BLA") with the FDA. The Company has received guidance from the FDA as part of its IND filing that it would be acceptable to file a Biologics License Application submission that includes the single, pivotal Phase 3 SIERRA clinical study if it is successful.

The Company is also conducting a Phase 2 clinical trial for Actimab-A, a Phase 1 clinical trial to study Actimab-M in refractory multiple myeloma, and is also developing it AWE Technology Platform that utilizes ^{225}Ac, an alpha emitting radioisotope. The Company has licensed and owns intellectual property pertaining to its technology platform that includes the methods of treating cancer and the generation of radioimmunoconjugates. Actinium continually develops additional intellectual property for its technology platform.

As of March 2018, the Company's patent portfolio includes: 68 issued and pending patent applications, of which 11 are issued in the United States, 4 are pending in the United States, and 53 are issued internationally and pending internationally. Additionally, several non-provisional patent applications have and are expected to be filed in 2018 based on provisional patent applications filed in 2017 and 2018. This is part of an ongoing strategy to continue to strengthen Actinium's intellectual property position. Approximately one quarter of its patents are in-licensed from third parties and the remainder are Actinium-owned. These patents cover key areas of our business, including use of the ^{225}Ac and other alpha emitting isotopes attached to cancer specific carriers like monoclonal antibodies, methods for manufacturing key components of product candidates including ^{225}Ac, the alpha emitting radioisotope and carrier antibodies, and methods of use and for manufacturing finished product candidates for use in cancer treatment.

Principles of Consolidation - The consolidated financial statements include the Company's accounts and those of the Company's wholly owned subsidiaries. All significant intercompany accounts and transactions have been eliminated.

Use of Estimates in Financial Statement Presentation - The preparation of these consolidated financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Cash and Cash Equivalents - The Company considers all highly liquid accounts with original maturities of three months or less to be cash equivalents. Balances held by the Company are typically in excess of Federal Deposit Insurance Corporation insured limits.

Property and Equipment - Machinery and equipment are recorded at cost and depreciated on a straight-line basis over estimated useful lives of three years. Furniture and fixtures are recorded at cost and depreciated on a straight-line basis over estimated useful lives of three years. When assets are retired or sold, the cost and related accumulated depreciation are removed from the accounts, and any related gain or loss is reflected in operations. Repairs and maintenance expenditures are charged to operations.

Derivatives - All derivatives are recorded at fair value on the balance sheet. As market prices are not readily available, fair values are determined using market-based pricing models incorporating readily observable market data and requiring judgment and estimates.

Fair Value of Financial Instruments - Fair value is defined as the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants. A fair value hierarchy has been established for valuation inputs that gives the highest priority to quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. The fair value hierarchy is as follows:

Level 1 Inputs - Unadjusted quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date.

Level 2 Inputs - Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. These might include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable for the asset or liability (such as interest rates, volatilities, prepayment speeds, credit risks, etc.) or inputs that are derived principally from or corroborated by market data by correlation or other means.

Level 3 Inputs - Unobservable inputs for determining the fair values of assets or liabilities that reflect an entity's own assumptions about the assumptions that market participants would use in pricing the assets or liabilities.

The following tables set forth assets and liabilities measured at fair value on a recurring basis by level within the fair value hierarchy as of December 31, 2017 and 2016. As required by ASC 820 "*Fair Value Measurements and Disclosures"*, financial assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. The Company's assessment of the significance of a particular input to the fair value measurement requires judgment and may affect the valuation of fair value assets and liabilities and their placement within the fair value hierarchy levels.

	Level 1	Level 2	Level 3	Total
Derivative liabilities:				
At December 31, 2017	$ -	$ -	$15,916	$15,916
At December 31, 2016	$ -	$ -	$300,683	$300,683

Income Taxes - The Company uses the asset and liability method to calculate deferred taxes. Deferred taxes are recognized based on the differences between the financial reporting and income tax bases of assets and liabilities using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. The Company reviews deferred tax assets for a valuation allowance based upon whether it is more likely than not that the deferred tax asset will be fully realized. A valuation allowance, if necessary, is provided against deferred tax assets, based upon

management's assessment as to their realization.

The Company recognizes tax positions when the positions meet a "more-likely-than-not" recognition threshold. There were no tax positions for which it is considered reasonably possible that the total amounts of unrecognized tax benefits will significantly increase or decrease within the next year. The Company recognizes interest related to unrecognized tax benefits in interest expense and penalties in operating expenses.

Research and Development Costs - Research and development costs are expensed as incurred. Research and development reimbursements and grants are recorded by the Company as a reduction of research and development costs.

Share-Based Payments - The Company estimates the fair value of each stock option award at the grant date by using the Black-Scholes option pricing model. The fair value determined represents the cost for the award and is recognized over the vesting period during which an employee is required to provide service in exchange for the award. The Company accounts for forfeitures of stock options as they occur.

Net Loss Per Common Share - Basic loss per common share is computed by dividing the net loss available to common stockholders by the weighted average number of common shares outstanding during the reporting period. For the years ended December 31, 2017, 2016 and 2015, the Company's potentially dilutive shares, which include outstanding common stock options and warrants have not been included in the computation of diluted net loss per share as the result would have been anti-dilutive.

	December 31, 2017	December 31, 2016	December 31, 2015
Options	5,174,592	5,906,886	3,971,583
Warrants	25,662,340	8,964,752	9,018,470
Total	30,836,932	14,871,638	12,990,053

Subsequent Events - The Company's management reviewed all material events through the date the consolidated financial statements were issued for subsequent event disclosure consideration.

Reclassifications - Certain reclassifications have been made to the prior year financial statements to conform to the current year presentation.

Recent Accounting Pronouncements – In February 2016, FASB issued ASU No. 2016-02 "*Leases*" (Topic 842), which creates new accounting and reporting guidelines for leasing arrangements. The new guidance requires organizations that lease assets to recognize assets and liabilities on the balance sheet related to the rights and obligations created by those leases, regardless of whether they are classified as finance or operating leases. Consistent with current guidance, the recognition, measurement, and presentation of expenses and cash flows arising from a lease primarily will depend on its classification as a finance or operating lease. The guidance also requires new disclosures to help financial statement users better understand the amount, timing, and uncertainty of cash flows arising from leases. The new standard is effective for annual reporting periods beginning after December 15, 2018, including interim periods within that reporting period, with early application permitted. The new standard is to be applied using a modified retrospective approach. The Company is currently evaluating the impact of the new pronouncement on its financial statements.

In April 2016, the FASB issued ASU No. 2016-10, "*Revenue from Contracts with Customers: Identifying Performance Obligations and Licensing (Topic 606)*". In March 2016, the FASB issued ASU No. 2016-08, "*Revenue from Contracts with Customers: Principal versus Agent Considerations (Reporting Revenue Gross verses Net) (Topic 606)*". These amendments provide additional clarification and implementation guidance on the previously issued ASU 2014-09, "Revenue from Contracts with Customers". The amendments in ASU 2016-10 provide clarifying guidance on materiality of performance obligations; evaluating distinct performance obligations; treatment of shipping and handling costs; and determining whether an entity's promise to grant a license provides a customer with either a right to use an entity's intellectual property or a right to access an entity's intellectual property. The amendments in ASU

2016-08 clarify how an entity should identify the specified good or service for the principal versus agent evaluation and how it should apply the control principle to certain types of arrangements. The adoption of ASU 2016-10 and ASU 2016-08 is to coincide with an entity's adoption of ASU 2014-09, which the Company intends to adopt for interim and annual reporting periods beginning after December 15, 2017. The Company is in the process of evaluating the standard and does not expect the adoption will have a material effect on its consolidated financial statements and disclosures.

In May 2016, the FASB issued ASU No. 2016-12, "*Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients"*, which narrowly amended the revenue recognition guidance regarding collectability, noncash consideration, presentation of sales tax and transition and is effective during the same period as ASU 2014-09. The Company is currently evaluating the standard and does not expect the adoption will have a material effect on its consolidated financial statements and disclosures. The Company is in the process of performing an initial review of custom contracts to determine the impact that ASU 2014-09 and its subsequent updates will have on the Company's condensed consolidated financial statements or financial statement disclosures upon adoption. Based on this preliminary review, the Company believes that the timing and measurement of revenue for these customers will be similar to the current revenue recognition. However, this view is preliminary and could change based on the detailed analysis associated with the conversion and implementation phases of ASU 2014-09. The Company intends to utilize the transition method, retrospectively adopting with the cumulative effect of initially applying the standard at the date of initial application.

Management does not believe that any recently issued, but not yet effective accounting pronouncements, when adopted, will have a material effect on the consolidated financial statements.

Note 2 - Related Party Transactions

MSKCC:

On February 11, 2002, the Company entered into a License, Development and Commercialization Agreement with Sloan-Kettering Institute of Cancer Research ("SKI"), an entity related to Memorial Sloan-Kettering Cancer Institute, Inc. ("MSKCC"). The agreement was amended in August 2006. Pursuant to the agreement, the Company licensed certain intellectual property from SKI, including critical patents with respect to the Company's core technology that also supports ongoing research and clinical development of related drug candidates. MSKCC agreed, subject to certain conditions, to utilize the funds paid for certain clinical and preclinical programs and activities related to the Company's drug development and clinical study programs, including the payment of certain costs and expenses that would otherwise have been borne by the Company.

The Company is obligated to make the following milestone payments:

Milestones	Payments
(1) filing of an New Drug Application ("NDA") or regulatory approval for each licensed product	$750,000
(2) upon the receipt of regulatory approval from the U.S. FDA for each licensed product	1,750,000

Under the agreement, the Company shall pay to MSKCC on a country-by-country basis a royalty of 2% of net sales of all licensed products until the later of: (1) 10 years from the first commercial sale, or (2) when the patents expire.

For the years ended December 31, 2017, 2016 and 2015, the Company incurred $0.1 million, $0.1 million and $0.2 million, respectively, for maintenance fees and research conducted by MSKCC.

On December 21, 2015, Actinium entered into an investor rights agreement with MSKCC. Under the terms of the agreement, MSKCC has agreed to forebear from transferring or otherwise disposing of its approximately 5.7 million shares of the Company's common stock (other than pursuant to a piggyback registration as described below) until the start of the Actimab-A Phase 2 clinical study. The Company started the Actimab-A Phase 2 clinical study in September 2016. Thereafter MSKCC is permitted to sell its shares subject to a weekly volume limitation of 150,000 shares (which limit may be increased to up to 250,000 shares per week to the extent any prior weekly allotments are not fully used) and applicable law so long as MSKCC maintains at least 25% of its current shareholding in Actinium through December 31, 2016. Actinium has granted MSKCC piggyback registration rights that would be triggered in

the event Actinium were to engage in a public registered offering of its shares for its own account where other shareholders are participating as selling shareholders or where such public registered offering is for the account of other selling shareholders. In addition, Actinium granted MSKCC unlimited Form S-3 registration rights with respect to its shares following December 31, 2016. As of December 31, 2017, MSKCC owned 1,230,954 shares of our common stock.

Note 3 - Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consisted of the following at December 31, 2017 and 2016:

	December 31, 2017	December 31, 2016
Prepaid insurance	$ 72,371	$ 332,809
Prepaid clinical trial expenses	226,997	1,093,441
Other prepaid expenses	139,954	410,201
Total prepaid expenses and other current assets	$ 439,322	$ 1,836,451

Note 4 - Property and Equipment

Property and equipment consisted of the following at December 31, 2017 and 2016:

	Lives	December 31, 2017	December 31, 2016
Lab equipment	3 years	$ 116,070	$ 116,070
Office equipment	3 years	156,940	142,933
Less: accumulated depreciation		(215,660)	(170,454)
Property and equipment, net		$ 57,350	$ 88,549

Note 5 - Derivatives

The Company has determined that certain warrants the Company issued contain provisions that protect holders from future issuances of the Company's common stock at prices below such warrants' respective exercise prices. These provisions could result in modification of the warrants' exercise price based on a variable that is not an input to the fair value of a "fixed-for-fixed" option as defined under FASB ASC Topic No. 815 - 40. The warrants granted in connection with two issuances of the Company's common stock contain anti-dilution provisions that provide for a reduction in the exercise price of such warrants in the event that future common stock or common stock equivalents are issued at a price per share that is less than the exercise price of such warrant at the time. The amount of any such adjustment is determined in accordance with the provisions of the warrants and depend upon the number of shares of common stock issued and the exercise price of the warrant at the time.

Activities for derivative warrant instruments during the years ended December 31, 2017 and 2016 were as follows:

	Shares subject to warrants	Fair Value
Balance, December 31, 2015	1,627,369	$2,848,902
Transfer from liability to equity classification	(12,109)	(17,455)
Change in fair value	-	(2,530,764)
Balance, December 31, 2016	1,615,260	300,683
Modification of warrants	-	19,356
Expiration of derivative warrants	(1,558,048)	-
Change in fair value	-	(304,123)

Balance, December 31, 2017	57,212	$15,916

On March 14, 2017, the Company canceled derivative warrants to purchase 57,212 common shares of the Company, dated December 19, 2012 and issued a new warrant to purchase 57,212 common shares of the Company, see Note 7. As a result of the replacement, the Company recorded an additional expense of $19,356 for the incremental value of the derivative warrant.

During the year ended December 31, 2016, 183,718 warrants were exercised, of which 12,109 were derivative warrants. The fair value of these derivative warrants totaling $17,455 were measured on the various exercise dates and reclassified to additional paid-in capital.

The fair values of the derivative warrants were calculated using a binomial valuation model with the following assumptions at each balance sheet date.

	December 31, 2017		December 31, 2016	
Market value of common stock on measurement date (1)	$ 0.66		$ 0.88	
Adjusted exercise price	$ 1.67		$ 2.34	
Risk free interest rate (2)	2.09	%	0.85	%
Warrant lives in years	4.1 years		2.0 years	
Expected volatility (3)	80	%	61 – 69	%
Expected dividend yield (4)	-		-	
Probability of stock offering in any period over 5 years (5)	100	%	100	%
Offering price (6)	$ 0.50		$ 1.25	

(1) The market value of common stock at the above measurement dates is based on the Company's closing price quoted on the NYSE American.

(2) The risk-free interest rate was determined by the Company's management using the Treasury Bill rate as of the respective measurement date.

(3) The volatility was estimated using the historical volatilities of the Company's common stock traded in NYSE American.

(4) Management does not expect to pay dividends for the foreseeable future.

(5) Management determines the probability of future stock offering at each evaluation date.

(6) Represents the estimated offering price in future offerings as determined by management.

Note 6 - Commitments and Contingencies

License and Research Agreements

The Company has entered into license and research and development agreements with third parties under which the Company was obligated to make upfront payments as well as milestone and royalty payments. Notable inclusions in this category are:

a. AbbVie Biotherapeutics Corp. - The Company entered into a Product Development and Patent License Agreement with AbbVie Biotherapeutics Corp. in 2003 to secure exclusive rights to a specific antibody when conjugated with alpha emitting radioisotopes. Upon execution of the agreement, the Company made a license fee payment of $3,000,000.

The Company agreed to make milestone payments totaling $7,750,000 for the achievement of certain contracted milestones.

Under the agreement, the Company shall pay to AbbVie Biotherapeutics Corp. on a country-by-country basis a royalty of 12% of net sales of all licensed products until the later of: (1) 12.5 years after the first commercial sale, or (2) when the patents expire.

The Company met its first milestone in 2012 and upon reaching the milestone the Company paid AbbVie Biotherapeutics Corp. a milestone payment of $750,000. The milestone payment for the Phase 1 Clinical Trial was recorded as research and development expense. In September 2016, the Company met its second milestone and as of December 31, 2017, $750,000 was included in accounts payable and accrued expenses on the balance sheet.

b. MSKCC - see Note 2 - Related Party Transactions.

c. Oak Ridge National Laboratory ("ORNL") – The Company is contracted to purchase radioactive material to be used for research and development, with a renewal option at the contract end. On January 9, 2017, the Company signed a contract with ORNL to purchase $0.7 million of radioactive material. During the years ended December 31, 2017, 2016 and 2015, the Company purchased material from ORNL of approximately $0.6 million, $1.0 million and $0.8 million, respectively. On December 13, 2017, the Company signed a contract with ORNL to purchase $0.2 million of radioactive material during calendar year 2018.

d. On June 15, 2012, the Company entered into a license and sponsored research agreement with Fred Hutchinson Cancer Research Center ("FHCRC") to build upon previous and ongoing clinical trials, with BC8 (licensed antibody). FHCRC has currently completed both a Phase 1 and Phase 2 clinical trial with BC8. The Company has been granted exclusive rights to the BC8 antibody and related master cell bank developed by FHCRC A milestone payment of $1 million will be due to FHCRC upon FDA approval of the first drug. Upon commercial sale of the drug, royalty payments of 2% of net sales will be due to FHCRC. For the years ended December 31, 2017, 2016 and 2015, the Company incurred expenses of approximately $45,000, $0.4 million and $0.3 million, respectively, related to this agreement.

e. On February 27, 2014, the Company entered into a manufacturing agreement with Goodwin Biotechnology Inc. ("Goodwin"). Goodwin oversees the current Good Manufacturing Practices ("cGMP") production of a monoclonal antibody to be used in the Phase 3 clinical trial of Iomab-B. As of December 31, 2017, the remaining cost of the service agreement (only) is approximately $1.8 million. For each of the years ended December 31, 2017, 2016 and 2015, the Company paid Goodwin approximately $1.4 million, $0.7 million and $4.2 million, respectively.

f. On February 16, 2016, the Company entered into an agreement with Medpace, Inc. ("Medpace"), a Contract Research Organization. Medpace provides project management services for the Iomab-B study. The total project is estimated to cost approximately $7.2 million. Medpace bills the Company when services are rendered and the Company records the related expense to research and development costs. For the years ended December 31, 2017 and 2016, the Company paid Medpace approximately $2.8 million and $2.6 million, respectively.

g. On August 4, 2016, the Company entered into a CRO agreement with George Clinical Services, ("George"). George provides project management services for the study of Actimab-A used for a Phase 2 clinical trial. The total project is estimated to cost approximately $4.6 million. For the years ended December 31, 2017 and 2016, the Company paid George approximately $0.7 million and $0.1 million, respectively.

Lease Agreements

The Company does not own any real property. It currently leases office space located at 275 Madison Avenue, 7th Floor, New York, NY 10016. The lease expires September 6, 2022 with an annual rental rate of $312,660 per year through June 6, 2019 and an annual rate of $341,610 for the remaining period. The Company is also responsible for certain other costs, such as insurance, taxes, utilities, and maintenance. The Company issued a letter of credit of

$390,825 in connection with the lease and maintains a $390,940 certified deposit as collateral for the letter of credit.

On June 8, 2017, the Company also entered into a license agreement for furniture and fixtures located at its office space. Pursuant to the terms of the agreement, the Company leases the furniture, fixtures, equipment and tenant improvements located in the office space for the same term as the office space for $7,529 per month. The Company shall have at any time during the term of this amended agreement the right to purchase the furniture, fixtures and equipment.

Future minimum obligations on all of the Company's leases are:

For the year ending December 31:	
2018	$403,008
2019	419,896
2020	431,958
2021	431,958
Thereafter	287,972
Total	$1,974,792

Note 7 - Equity

During the year ended December 31, 2017, the Company issued 2,672,973 shares of common stock for gross proceeds of approximately $4.0 million as part of its At-The-Market ("ATM") sales agreement with an investment bank. The Company paid expenses of approximately $0.2 million resulting in net proceeds of $3.8 million.

On August 2, 2017, the Company completed an underwritten public offering of 21,500,000 shares of its common stock and warrants to purchase 18,275,000 shares of the Company's common stock at an offering price to the public of $0.75 per share and related warrant. The warrants have an exercise price of $1.05 per share and have a term of five years. The gross proceeds from this offering were approximately $16.1 million, before deducting underwriting discounts and commissions and other estimated offering expenses payable by the Company resulting in net proceeds of approximately $15.0 million.

On October 4, 2016, the Company sold 8,000,000 shares of its common stock at a price of $1.25 per share to the public through an underwritten public offering.

On February 11, 2015, the Company completed an underwritten offering of 4,444,444 shares of its common stock and warrants to purchase 3,333,333 shares of its common stock at a price to the public of $4.50 per share. The warrants are exercisable for a period of 4 years at an exercise price of $6.50 per share and had a relative fair value of $3,540,659 on the issuance date. The Company received net proceeds of approximately $18.5 million, after deducting underwriting discounts and commissions.

On June 9, 2015, the Company closed a financing with certain investors in which it raised approximately $5,000,000 in gross proceeds or $4,480,000 in net proceeds, after deducting placement agent's fees and other offering expenses.

Investors purchased 1,923,078 shares of the Company's common stock, at a price per share of $2.60.

During the year ended December 31, 2017, the Company issued 67,385 common shares for consulting services. The shares have a total value of $99,056 based on the Company's stock price on the grant date at $1.47 per share.

During the year ended December 31, 2017, the Company issued 4,234 common shares for the cashless exercise of warrants.

During the year ended December 31, 2016, the Company issued 125,862 common shares for the cashless exercise of warrants. During the year ended December 31, 2016, the Company also issued 23,212 common shares for $18,105 cash received from the exercise of options.

During the year ended December 31, 2015, the Company issued 1,532,124 common shares for the cashless exercise of warrants. During the year ended December 31, 2015, the Company also issued 224,153 common shares for $173,620 cash received from the exercise of options and warrants.

Approval of the 2013 Amended and Restated Stock Plan

In September 2013, the Board of Directors of the Company approved the Company's 2013 Stock Plan. The expiration date of the plan is September 9, 2023 and the total number of underlying shares of the Company's common stock available for grant to employees, directors and consultants of the Company under the plan was 2,750,000 shares. In December 2015, the shareholders of the Company approved the second amendment to the plan and increased the number of shares authorized under the plan to 9,250,000 shares. In December 2016, the shareholders of the Company approved the fifth amendment to the plan and increased the number of shares authorized under the plan to 12,750,000 shares. In December 2017, the shareholders of the Company approved the sixth amendment to the plan and increased the number of shares authorized under the plan to 17,750,000 shares.

Approval of the Equity Incentive Plan

In September 2013, the Board approved the Company's 2013 Equity Incentive Plan. The expiration date of the plan is September 9, 2023 and the total number of shares of the Company's common stock available for grant to employees, directors and consultants of the Company under the plan is 450,000 shares. In December 2013, the shareholders of the Company approved the plan and increased the number of shares authorized under the plan to 1,000,000 shares.

Restricted Stock

During the year ended December 31, 2017, the Company issued 26,000 common shares for restricted shares that became fully vested. During the year ended December 31, 2017, the Company also granted 59,393 common shares for consulting services. The shares have a total value of $65,813 based on the services provided and have yet to be issued.

During the year ended December 31, 2016, the Company granted 250,700 shares of restricted common stock to consultants with a fair value of $0.4 million based on the stock price on the grant dates. Of the 250,700 restricted share awards granted in 2016, 60,700 shares vested at the date of grant, 150,000 shares vest over a six-month period and 40,000 shares vest over 2 years.

During the year ended December 31, 2016, the Company issued common shares totaling 21,000 for restricted shares granted in 2015 and prior years and 60,700 for restricted shares granted in 2016.

During the year ended December 31, 2015, the Company granted 479,651 shares of restricted common stock to consultants with a fair value of $2.3 million based on the stock price on the grant dates. Of the 479,651 restricted share awards granted in 2015, 329,651 shares vested at the date of grant and 150,000 shares vest over a six-month period.

During the year ended December 31, 2015, the Company cancelled 126,265 shares of restricted stock originally granted to employees and issued a total of 152,499 options. As a result of the cancellation of the 126,265 restricted shares, the Company recorded an expense of $0.8 million for the grant-date fair value of the restricted stock for which the requisite service is expected to be rendered.

As of December 31, 2017, the Company has yet to issue 281,301 common shares for restricted shares that have vested.

During the year ended December 31, 2017, 2016 and 2015, the Company recorded approximately $0.2 million, $0.6 million and $3.4 million, respectively, in stock-based compensation for all of the restricted shares granted.

Stock Options

Following is a summary of option activities for the years ended December 31, 2017, 2016 and 2015:

	Number of Units	Weighted Average Exercise	Weighted Average Remaining	Aggregate Intrinsic Value

		Price	Contractual Term (in years)	
Outstanding, December 31, 2014	3,013,084	$ 5.98	8.35	4,728,842
Granted	1,554,499	2.78		
Cancelled	(576,000)	8.70		
Exercised	(20,000)	0.78		
Outstanding, December 31, 2015	3,971,583	$ 4.34	8.01	2,964,146
Granted	2,225,000	1.92		
Cancelled	(266,485)	2.51		
Exercised	(23,212)	0.78		
Outstanding, December 31, 2016	5,906,886	3.52	7.90	51,704
Granted	2,597,500	1.32		
Cancelled	(3,329,794)	2.85		
Outstanding, December 31, 2017	5,174,592	2.83	7.95	2,648
Exercisable, December 31, 2017	2,415,632	3.98	6.38	-

On June 6, 2017, Sergio Traversa, a director, resigned from the Company and the Company entered into an agreement with Mr. Traversa. Pursuant to the agreement, all the outstanding vested options (which originally were to expire 90 days from termination date) as well as 68,200 unvested options granted prior to December 31, 2016, shall be exercisable until the end of the term of each option grant agreement. As a result of the modification, the Company recorded an additional expense of approximately $174,000 for the incremental fair value of the options, calculated using the Black-Scholes option-pricing model. Variables used in the Black-Scholes option-pricing model include: (1) discount rate range from 0.97% to 1.39% (2) expected life of 3 months to 8.9 years, (3) expected volatility range from 45.72% to 79.81%, and (4) zero expected dividends.

During the year ended December 31, 2017, the Company granted its employees and members of the Board of Directors 2,597,500 options to purchase the Company's common stock with an exercise price ranging from $0.57 to $1.58 per share, a term of 10 years, and a vesting period from 4 to 4.2 years. The options have an aggregated fair value of $2.4 million that was calculated using the Black-Scholes option-pricing model. Variables used in the Black-Scholes option-pricing model include: (1) discount rate range from 1.84% to 2.28% (2) expected life of 6 years, (3) expected volatility range from 80.83% to 82.37%, and (4) zero expected dividends. The estimated option life was determined based on the "simplified method," giving consideration to the overall vesting period and the contractual terms of the award. This method was used because the Company does not have sufficient historical option exercise data.

During the year ended December 31, 2016, the Company granted employees, consultants, and its board members 2,225,000 options to purchase the Company's common stock with exercise prices ranging from $0.95 to $2.25 with a 10-year term vesting over a 4-year period. The options have an aggregated fair value of $3.1 million that was calculated using the Black-Scholes option-pricing model. Variables used in the Black-Scholes option-pricing model include: (1) discount rate of 1.28% - 1.97% (2) expected life of 6 years, (3) expected volatility of 81.45% - 87.95%, and (4) zero expected dividends.

During the year ended December 31, 2015, the Company granted employees, consultants, and its board members 1,554,499 options to purchase the Company's common stock with exercise prices ranging from $1.79 to $3.58 and a 10 year with vesting ranging from 1 to 4.17 years. The options have an aggregated fair value of $3.2 million that was calculated using the Black-Scholes option-pricing model. Variables used in the Black-Scholes option-pricing model include: (1) discount rate of 1.56% - 1.91% (2) expected life of 6 years, (3) expected volatility of 85.01% - 94.89%, and (4) zero expected dividends.

During the year ended December 31, 2017, options to purchase 3,329,794 common shares were cancelled upon the termination of employees and a board member.

During the years ended December 31, 2016 and 2015, the Company received gross proceeds of $18,105 and $15,680 for the exercise of options for 23,212 shares and 20,000 shares, respectively, of the Company's common stock. There

were no exercises of options during the year ended December 31, 2017.

The fair values of all options issued and outstanding are being amortized over their respective vesting periods. The unrecognized compensation expense at December 31, 2017 was approximately $3.3 million. During each of the years ended December 31, 2017, 2016 and 2015, the Company recorded total option expense of approximately $3.1 million, $3.6 million and $3.4 million, respectively.

Warrants

Following is a summary of warrant activities for the years ended December 31, 2017, 2016 and 2015:

	Number of Units	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding, December 31, 2014	7,698,497	1.64	3.97	34,317,224
Granted	3,333,333	6.50		
Exercised	(2,013,360)	0.41		
Outstanding, December 31, 2015	9,018,470	3.73	2.93	10,199,230
Granted	130,000	0.96		
Exercised	(183,718)	0.90		
Outstanding, December 31, 2016	8,964,752	3.72	1.95	1,445,786
Granted	18,496,575	1.05		
Exercised	(9,364)	0.78		
Cancelled	(1,789,623)	2.22		
Outstanding, December 31, 2017	25,662,340	1.89	3.62	995,373
Exercisable, December 31, 2017	25,462,340	1.85	3.61	995,373

Certain warrants were issued to the Company’s Executive Chairman (now Chairman and CEO) as part of investment banking and advisory services either prior to and outside of his role as a Board Member and subsequently Chairman and CEO. On March 14, 2017, the Company canceled a warrant to purchase 57,212 shares of Common Stock of the Company, dated December 19, 2012 and issued a new warrant to its Chairman and CEO to purchase 57,212 common shares with the term of the warrant expiring on February 11, 2022. The new warrant has the same exercise price in effect as the exercise price as the old warrant but the expiration date was modified from December 19, 2017 to February 11, 2022. The Company also amended the warrant to purchase Common Stock of the Company, dated January 31, 2012, issued to its Chairman and CEO and an entity affiliated with its Chairman and CEO to purchase 64,746 and 99,617 common shares, respectively. Pursuant to the terms of the warrant amendments, the term of the warrants was extended to February 11, 2022 from January 31, 2019. As a result of the replacement and modification, the Company recorded an additional non-cash expense of $64,091 for the incremental fair value of the new warrants.

On August 2, 2017, the Company completed an underwritten offering of 21,500,000 shares of its common stock and warrants to purchase an aggregate of 18,275,000 shares of its common stock at a price of $0.75 per share and related warrant. The warrants are exercisable for a period of 5 years at an exercise price of $1.05 per share. The transaction date relative fair value of the warrants of $4.9 million was determined utilizing the Black-Scholes option pricing

model. Variables used in the Black-Scholes option-pricing model include (1) discount rate of 1.83%, (2) expected term of 5 years, (3) expected volatility of 82%, and (4) zero expected dividends.

During the year ended December 31, 2016, the Company granted 130,000 warrants to consultants. The warrants are exercisable for periods ranging from 5 to 10 years at exercise prices ranging from $0.98 to $1.77 per share. The fair value of the warrants was approximately $116,000 at the grant date and was determined utilizing the Black-Scholes option pricing model. Variables used in the Black-Scholes option-pricing model include (1) discount rate range of 1.13% to 1.20%, (2) expected term of 5-10 years, (3) expected volatility range of 79.79% to 84.84%, and (4) zero expected dividends.

On February 11, 2015, the Company completed an underwritten offering of 4,444,444 shares of its common stock and warrants to purchase 3,333,333 shares of its common stock at a price of $4.50 per share. The warrants are exercisable for a period of 4 years at an exercise price of $6.50 per share. The transaction date relative fair value of the warrants of $3.5 million was determined utilizing the Black-Scholes option pricing model. Variables used in the Black-Scholes option-pricing model include (1) discount rate of 1.26%, (2) expected term of 4 years, (3) expected volatility of 72%, and (4) zero expected dividends.

During the years ended December 31, 2017, 2016 and 2015, warrants to purchase 9,364, 183,718 and 2,013,360 shares of the Company’s common stock were exercised by the warrant holders, respectively. The Company issued 4,234, 125,892 and 1,736,277 shares of common stock as a result of these exercises, respectively.

During the years ended December 31, 2017, 2016 and 2015, the Company recorded stock-based compensation expense related to the warrants of approximately $50,000 (excluding the $64,091 addition expense due to the replacement and modification), $0.1 million and $0.2 million, respectively.

Note 8 – Income Taxes

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's deferred tax assets and liabilities at December 31, 2017 and 2016 are as follows:

	2017	2016
Deferred tax assets:		
Net operating losses carry forward	$30,826,534	$38,874,255
Share-based compensation	3,731,413	8,081,711
Research & Development/Orphan Drug Credits	6,324,998	830,085
Others	11,369	16,329
Less: valuation allowance	(40,894,314)	(47,802,380)
Deferred tax assets, net	$-	$-

The Company has recorded a valuation allowance of $40.9 million and $47.8 million against its deferred tax assets at December 31, 2017 and 2016, respectively, because management determined that it is not more-likely-than not that those assets will be realized.

For federal income tax purposes, the Company has approximately $123.3 million of unused net operating losses ("NOLs") at December 31, 2017 available for carry forward to future years. These NOLs will begin to expire if unused in 2018.

For state income tax purposes, the Company has approximately $77.5 million of unused NOLs at December 31, 2017 available for carry forward to future years. These NOLs will begin to expire if unused in 2035.

The Company has Federal Research and Development tax credits of approximately $1.3 million at December 31, 2017 which will begin to expire if unused in 2033 and Orphan Drug Credits of $5.0 million which will begin to expire if unused in 2027.

Federal and state tax laws impose limitations on the utilization of net operating losses and credit carryforwards in the event of an ownership change for tax purposes, as defined in Section 382 of the Internal Revenue Code. Accordingly, the Company's ability to utilize these carryforwards may be limited as a result of an ownership change which may

have already happened or may happen in the future. Such an ownership change could result in a limitation in the use of the net operating losses in future years and possibly a reduction of the net operating losses available.

On December 22, 2017, the Tax Cuts and Jobs Act was signed into legislation and reduces the corporate tax rate to 21%, effective January 1, 2018. Consequently, the Company has recorded a decrease related to its deferred tax assets of $17.9 million with a corresponding adjustment to the valuation allowance of $17.9 million for the year ended December 31, 2017.

The difference between the income tax provision and the amount that would result if the U.S. Federal statutory rate of 34% were applied to pre-tax loss for the years ended December 31, 2017, 2016 and 2015 are as follows:

	For the year ended December 31, 2017		December 31, 2016		December 31, 2015	
Federal income taxes at 34%	$(9,044,420)	(34.0)%	$(8,269,386)	(34.0)%	$(7,148,607)	(34.0)%
State income taxes	(1,940,945)	(7.3)%	973,547	4.0 %	-	- %
Change in Federal statutory rate	17,939,714	67.4 %	-	- %	-	- %
Deferred true-up	3,090,816	11.8 %	(10,511,380)	(43.3)%	1,104,763	5.2 %
Research and Development/Orphan Drug Tax Credit	(3,029,074)	(11.4)%	(141,769)	(0.6)%	-	- %
Unrealized derivative gain/loss	(120,870)	(0.5)%	(956,840)	(3.9)%		
Other	12,845	0.0 %	13,632	0.1 %	-	- %
Change in valuation allowance	(6,908,066)	(26.0)%	18,892,196	77.7 %	6,043,844	28.8 %
Provision for income tax	$-	-	$-	-	$-	-

Note 9 – Subsequent Events

On March 6 and March 9, 2018, the Company completed a rights offering pursuant to its effective registration statement on Form S-3, as amended (Registration Statement No. 333-216748), previously filed with and declared effective by the Securities and Exchange Commission (the “SEC”), and a prospectus and prospectus supplements filed with the SEC (the “Rights Offering”). Pursuant to the Rights Offering, Actinium sold an aggregate of 30,125,326 units consisting of an aggregate of 30,125,326 shares of common stock, 7,531,304 series A warrants and 22,593,967 series B warrants, with each series A warrant exercisable for one share of Common Stock at an exercise price of $0.60 per share and each series B warrant exercisable for one share of Common Stock at an exercise price of $0.70 per share, resulting in gross proceeds to Actinium of approximately $15.1 million, and net proceeds of approximately $13.9 million after deducting expenses relating to dealer-manager fees and expenses, and excluding any proceeds received upon exercise of any warrants.

During January and February 2018, the Company issued 1,000 shares of common stock to an employee for vesting of a restricted stock grant.

During January and February 2018, the Company granted its employees options to purchase 785,000 common shares at an average price of $0.64 per share.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES.

Disclosure controls and procedures. The Company, under the supervision and with the participation of its management, including the Company's principal executive officer and principal financial and accounting officer, evaluated the effectiveness of the Company's "disclosure controls and procedures," as such term is defined in Rule 13a-15(e) under the Securities Act of 1934, as amended (the "Exchange Act"), as of the end of the period covered by this Annual Report on Form 10-K. Based on that evaluation, the Company's principal executive officer and principal financial and accounting officer have concluded that the Company's disclosure controls and procedures are effective as of December 31, 2017 to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in Securities and Exchange Commission rules and forms, and includes controls and procedures designed to ensure that information required to be disclosed by the Company in such reports is accumulated and communicated to the Company's management, including the Company's principal executive officer and principal financial and accounting officer, as appropriate, to allow timely decisions regarding required disclosure.

Management's Annual Report on Internal Control Over Financial Reporting. The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting. The Company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

The Company's internal control over financial reporting includes policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect transactions and dispositions of assets; (2) provide reasonable assurances that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures are being made only in accordance with authorizations of management and the directors of the Company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on our financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2017. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control-Integrated Framework (2013). Based on our assessment and those criteria, management concluded that as of December 31, 2017, the Company's internal control over financial reporting was effective.

***Changes in internal controls over financial reporting*.** There were no changes in the Company's internal controls over financial reporting that occurred during the fourth quarter of the fiscal year covered by this Annual Report on Form 10-K that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

ITEM 9B. OTHER INFORMATION.

Item 1.01 Entry into a Material Definitive Agreement.

On March 14, 2018, the Company executed an amendment to the Company's 2013 Amended and Restated Stock Plan, as amended (the "Plan Amendment"). The Plan Amendment increases the number of shares of common stock that the Company is authorized to issue under the plan to 17,750,000 shares.

As previously disclosed in Item 5.07 of the Current Report on Form 8-K filed with the Securities and Exchange Commission on December 21, 2017, the Plan Amendment was approved by Actinium's stockholders at the 2017 annual meeting of stockholders held on December 20, 2017. The foregoing description of the Plan Amendment does not purport to be complete and is qualified in its entirety by reference to the full text of the Plan Amendment, a copy of which is filed as Exhibit 10.56 to this Form 10-K and incorporated in this Item 1.01 by reference.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE.

Directors and Executive Officers

The names, positions and ages of our directors and executive officers as of March 16, 2018, are as follows:

Name	Age	Position
Sandesh Seth	52	Chairman and Chief Executive Officer
Mark S. Berger, MD	62	Chief Medical Officer
Nitya Ray, Ph.D.	65	Executive Vice President, Head of Product Development, Manufacturing and Supply Chain
Anil Kapur	48	Chief Commercial Officer
Dale L. Ludwig, Ph. D.	56	Chief Scientific Officer
Steve O'Loughlin	33	Principal Financial Officer (Principal Financial and Accounting Officer)
David Nicholson, Ph. D.	62	Lead Independent Director
Richard I. Steinhart	60	Director
Ajit S. Shetty, Ph.D.	71	Director

Subject to the classified board provisions of our charter, all directors hold office until the next annual meeting of stockholders and the election and qualification of their successors. Officers are elected annually by the board of directors and serve at the discretion of the board.

There are no other arrangements or understanding between any of our directors and any other persons pursuant to which they were selected as a director.

Background of Executive Officers and Directors

The principal occupations for the past five years (and, in some instances, for prior years) of each of our directors and executive officers are as follows:

Sandesh Seth, Chairman and Chief Executive Officer

Mr. Sandesh Seth has been our Director since March 2012, our Chairman of the Board since October 2013, our Executive Chairman since August 2014 and our Chairman and Chief Executive Officer since June 2017.

Mr. Seth has over 25 years of experience in investment banking (Laidlaw & Co. (UK) Ltd., Cowen & Co.), equity research (Bear Stearns, Commonwealth Associates) and in the pharma industry (Pfizer, Warner-Lambert, SmithKline in strategic planning, business development and R&D project management). Mr. Seth was the Chairman of the Board of Relmada Therapeutics, Inc., a publicly listed, specialty pharmaceuticals company on pain therapeutics of which he was an effective co-founder. Mr. Seth has an MBA in Finance from New York University; an M.S. in the Pharmaceutical Sciences from the University of Oklahoma Health Center and a B.Sc. in Chemistry from Bombay University. He has published several scientific articles and was awarded the University Regents Award for Research Excellence at the University of Oklahoma. Mr. Seth was designated as Regulatory Affairs Certified (R.A.C.) by the Regulatory Affairs Professionals Society which signifies proficiency with U.S. FDA regulations.

That Mr. Seth has served in various business executive-level positions over the course of his career, has significant, significant entrepreneurial, management and leadership skills and is well accustomed to interfacing with investors, analysts, auditors, C-level executives, and outside advisors, led us to conclude that Mr. Seth should serve as our Chairman and Chief Executive Officer.

Mark S. Berger, MD, Chief Medical Officer

Dr. Berger has been our Chief Medical Officer since January 2017. From September 2013 to January 2017 Dr. Berger worked for Kadmon Corporation where he was Senior Vice President, Clinical Research. In this role he was responsible for all clinical aspects of new drug development including designing and managing clinical trials in oncology indications (non-small cell lung cancer and glioblastoma) and non-oncology indications (chronic graft versus host disease and polycystic kidney disease). Dr. Berger joined Kadmon after serving as Chief Medical Officer of Deciphera Pharmaceuticals from June 2011 to September 2013. Prior to Deciphera, Dr. Berger was Vice President for Clinical Development at Gemin X Pharmaceuticals where he led the clinical strategy, design and management of clinical trials for two novel oncology agents including obatoclax, a pan Bcl-2 inhibitor. Based on the results of a randomized Phase 2 clinical trial of obatoclax, Gemin X was acquired by Cephalon in March of 2011 for a total consideration of $525 million including $225 million in an upfront cash payment.

Before his work with biotechnology companies, Dr. Berger held key positions in two global pharmaceutical companies. Dr. Berger previously served as Group Director, Medicine Development Centre-Oncology for GlaxoSmithKline. In this position Dr. Berger managed the development of Tykerb (lapatinib) in lung and breast cancer where he designed and led two Phase 2 clinical trials before planning and leading a 399-patient pivotal Phase 3 trial that resulted in the FDA approval of Tykerb in breast cancer. In addition, he managed the Lapatinib Expanded Access Program (LEAP) that enrolled over 4000 patients on a global basis. Dr. Berger began his career in drug development at Wyeth Research where he led the planning and execution of the pivotal Phase 2 trial for Mylotarg, which was the first antibody targeted chemotherapy agent and targeted CD33, similar to Actimab-A. He presented the Mylotarg clinical data at the FDA's Oncology Drug Advisory Committee meeting, after which Mylotarg received accelerated FDA approval for patients with relapsed AML.

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Dr. Berger has a B.A. in biology from Wesleyan University and received his M.D. from the University of Virginia School of Medicine. He did his Hematology-Oncology fellowship at the University of Pennsylvania where he was an Assistant Professor of Medicine, and also was a Research Fellow at the Ludwig Institute for Cancer Research and the Imperial Cancer Research Fund, both in London. Dr. Berger is board certified in internal medicine, hematology and medical oncology.

Nitya Ray, PhD, Executive Vice-President, Head of Product Development, Manufacturing and Supply Chain

Dr. Nitya Ray has been our Executive Vice-President, Head of Product Development, Manufacturing and Supply Chain since June 2017. Dr. Ray joins the Company from CytoDyn, Inc. where he was Sr. Vice President of Manufacturing and CMC Team Leader. At CytoDyn Dr. Ray developed robust and cost-effective manufacturing processes for an antibody therapeutic drug candidate, currently in two Phase 3 clinical studies intended to treat and prevent HIV infection. Dr. Ray led successful regulatory meetings with the FDA while simultaneously developing strategies for process development, scale-up, validation, commercial manufacturing, and supply chain to support potential commercialization of the CytoDyn's HIV therapeutic drug candidate. Prior to CytoDyn, Dr. Ray spent 15 years at Progenics Pharmaceuticals, Inc., a radiopharmaceutical therapeutic and diagnostic company, most recently as Senior Vice President, Manufacturing. At Progenics, Dr. Ray led the development of scalable manufacturing processes and achieved order-of-magnitude cost reduction through improved productivity and scale. In addition, Dr. Ray built process and product development teams for Progenics' small molecule, biologics, and radiopharmaceuticals that developed innovative processes for various phases of clinical development and commercial manufacturing. Dr. Ray supported in-house cGMP biologics manufacturing for Phase 1–3 clinical development and managed relationships with Contract Development and manufacturing Organizations (CDMO's) on a global basis. Dr. Ray also worked at Hoffman-La Roche with a focus on biopharmaceuticals and Verax Corporation in roles of increasing responsibility. Dr. Ray has a Ph.D. in Biochemical Engineering and an M.S. in Chemical and Biochemical Engineering from Rutgers University and a B.S. in Chemical Engineering from Jadavpur University.

Anil Kapur, Chief Commercial Officer

Mr. Kapur joined Actinium in February 2018 from Bristol-Myers Squibb, where he was the Vice President, Head of Early Assets, Biomarkers & External Innovation within the Worldwide Oncology Commercialization organization and helped advance the company's leading Immuno-Oncology portfolio. Prior to this position, he was the Vice President & Global Head, Oncology Commercial Portfolio & Product Strategy at Baxalta and a member of the Oncology Leadership Team. In this role, Mr. Kapur also led the Joint Strategic Committees responsible for advancing the early Immuno-Oncology partnerships with Symphogen and the allogeneic CAR-T partnership with Precision Bio-Sciences.

Mr. Kapur built a distinguished career spanning 15 years at Johnson & Johnson where in his last role, he served as the Vice President, Commercial Leader for the Hematology Franchise with responsibility for the development and

execution of global commercial strategy and launch plans for all Hematology in-market, late-stage development, and early pipeline assets. He is credited with significantly shaping the clinical development plans and successful launch and growth of multiple Oncology blockbuster products including IMBRUVICA®, DARZALEX®, and VELCADE®.

At J&J, he led the IMBRUVICA® Joint Commercial Committee (JCC), established between J&J and Pharmacyclics, and built and led the global team that launched DARZALEX®, the first biologic for Multiple Myeloma. Anil also held leadership roles of increasing complexity and responsibility in US Marketing, US Regional Sales, and within the Asia-Pacific Regional Oncology organization covering 14 markets including Japan, China, Australia and Korea.

Mr. Kapur has an MBA from the Fuqua School of Business at Duke University, a MS in Industrial Engineering from Louisiana Tech University, and a Bachelor of Engineering from the Birla Institute of Technology, India.

Dale L. Ludwig, Ph.D., Chief Scientific Officer

Dr. Ludwig joined Actinium in January 2018. Dr. Ludwig has worked for 20 years in oncology antibody drug discovery and development at Eli Lilly and Company and at ImClone Systems, Inc., until its acquisition by Eli Lilly where he supported the development and successful launch of several biologic oncology drugs including Erbitux®, Cyramza™, Portrazza®, and Lartruvo™ as well as the clinical advancement of 10 additional therapeutic antibodies. Most recently, Dr. Ludwig served Chief Scientific Officer/Vice President of Oncology Discovery Research - Biologics Technology. In this role he was responsible for directing antibody discovery and development for oncology biologics and contributed to key strategic and project advancement efforts. Dr. Ludwig was a member of the Oncology Research Senior Leadership Team and directed the empowered antibody drug discovery programs that included collaborations with Immunogen and Zymeworks.

Prior to the acquisition of Imclone by Eli Lilly and Company, Dr. Ludwig served as Head of Molecular & Cellular Engineering at IMClone Systems Incorporated. In this capacity, Dr. Ludwig served as core team leader for several IND filings and phase 1 advancements for novel antibodies. In addition, he directed and oversaw the full spectrum of drug development including antibody discovery, screening, selection, engineering, optimization, cloning and expression. He was also tasked with establishing meaningful preclinical collaborations with key academic investigators and industry leaders. Post-acquisition he was the research representative to the ImClone-Lilly Transition Team.

Before his work in the biotechnology industry, Dr. Ludwig trained as a postdoctoral associate in the DNA Damage and Repair Group of the Los Alamos National Laboratory and as a postdoctoral fellow in the Department of Molecular Genetics, Biochemistry and Microbiology at the University of Cincinnati College of Medicine. Dr. Ludwig has a B.S. in biology with a concentration in microbiology from James Madison University and received his Ph.D. in Microbiology from East Carolina University.

Steve O’Loughlin, BS, Principal Financial Officer

Steve O’Loughlin has been our Principal Financial Officer since May 2017. Mr. O’Loughlin joined Actinium in October 2015 as Vice President, Finance and Corporate Development, with almost a decade of life sciences industry experience gained from previous positions in investment banking and publicly traded life sciences companies. Prior to Actinium, from June 2015 to October 2015, Mr. O’Loughlin worked at J. Streicher LLC as an investment banker, from August 2012 to June 2015, Mr. O’Loughlin held the position of Vice President, Corporate Finance and Development and was a corporate officer at Protea Biosciences, Inc., a publicly traded life sciences tools company. Previously, From June 2010 to June 2012, Mr. O’Loughlin held corporate development positions with Caliber I.D., a publicly traded diagnostics company. Mr. O’Loughlin previously worked in investment banking at Jesup & Lamont where he focused on the biotechnology and life sciences industries. Mr. O’Loughlin has a B.S. in Business Administration with a

concentration in finance from Ramapo College of New Jersey.

C. David Nicholson, BS, PhD, Director

C. David Nicholson has been a Director of the Company since 2008 and is our Lead Director. Mr. Nicholson is also a member of our Audit Committee, Compensation Committee and Corporate Governance Committee. In August 2014, Mr. Nicholson joined Actavis plc and Forest Laboratories, Inc. as Senior Vice President, Actavis Global Brands R&D. From March 2012 to August 2014, Mr. Nicholson was on the Executive Committee of Bayer CropScience as Head of Research & Development responsible for the integration of the company's R&D activities into one global organization. Dr. Nicholson graduated in pharmacology, earning his B.Sc. from the University of Manchester (1975) and his Ph.D. from the University of Wales (1980). Between 1978 and 1988, Dr. Nicholson worked in the pharmaceutical industry for the British company Beecham-Wülfing in Gronau, Germany. The main emphasis of his activities as group leader in a multidisciplinary project group was the development of cardiovascular drugs.

From 1988-2007, Dr. Nicholson held various positions of increasing seniority in the UK, the Netherlands and the USA with Organon, a Business Unit of Akzo Nobel. Ultimately, he became Executive Vice President, Research & Development, and member of the Organon Executive Management Committee. He implemented change programs, leading to maximizing effectiveness in research & development, ensuring customer focus and the establishment of a competitive pipeline of innovative drugs. In 2007, Dr. Nicholson transferred to Schering-Plough, Kenilworth, New Jersey as Senior Vice President, responsible for Global Project Management and Drug Safety. From 2009 to December 2011, he was Vice President Licensing and Knowledge Management at Merck in Rahway, New Jersey, reporting to the President of Merck R&D. As an integration team member, David Nicholson played a role in the strategic mergers of Organon BioSciences, the human and animal health business of Dutch chemical giant Akzo-Nobel, and Schering-Plough in 2007 as well as of Schering-Plough and Merck in 2009.

That Dr. Nicholson brings over 25 years of pharmaceutical experience to our Board, having served in various pharmaceutical research and development executive-level positions over the course of his career, and that Dr. Nicholson has developed significant management and leadership skills relating to the pharmaceutical industry and is well accustomed to interfacing with investors, analysts, auditors, outside advisors and governmental officials, led us to conclude that Dr. Nicholson should serve as a director.

Richard I. Steinhart, MBA, Director

Mr. Steinhart has served as our Director and Chairman of the Audit Committee since November 2013. Mr. Steinhart is also a member of our Compensation Committee and Corporate Governance Committee. Since March 2014, Mr. Steinhart has been a Member of the Board of Directors of Atossa Genetics, Inc. where he is Chairman of the Audit Committee and a member of the Compensation Committee.

Mr. Steinhart is a Vice President and CFO at Bioxcel Therapeutics, Inc. a publicly traded clinical stage pharmaceutical company, a role he commenced in October 2017. Prior to this, from October 2015 through June 2017 Mr. Steinhart was Vice President and CFO of Remedy Pharmaceuticals, a privately held, clinical stage pharmaceutical company whose single product was sold to Biogen, Inc. in May 2017. From January 2014 through September 2015 Mr. Steinhart acted as a financial and strategic consultant to the biotechnology and medical device industries. From April 2006 through December 2013, Mr. Steinhart was employed by MELA Sciences, Inc., as their Vice President, Finance and Chief Financial Officer, Treasurer and Secretary. In April 2012, Mr. Steinhart received a promotion to Sr. Vice President, Finance and Chief Financial Officer. From May 1992 until joining MELA Sciences, Mr. Steinhart was a Managing Director of Forest Street Capital/SAE Ventures, a boutique investment banking, venture capital, and management consulting firm focused on healthcare and technology companies. Prior to Forest Street Capital/SAE Ventures, he was Vice President and Chief Financial Officer of Emisphere Technologies, Inc. Mr. Steinhart's other experience includes seven years at CW Group, Inc., a venture capital firm focused on medical technology and biopharmaceutical companies, where he was a General Partner and Chief Financial Officer. Mr. Steinhart began his career at Price Waterhouse, now known as PricewaterhouseCoopers. He holds BBA and MBA degrees from Pace University and is a Certified Public Accountant (inactive).

That Mr. Steinhart brings nearly 30 years of financial experience to our Board, having served in various financial executive-level positions over the course of his career, and that Mr. Steinhart is a certified public accountant led us to conclude that Mr. Steinhart should serve as a director and chair the audit committee.

Ajit S. Shetty, PhD, Director

Dr. Shetty has been a Director of the Company since March 2017. Dr. Shetty is also a member of our, Audit Committee, Compensation Committee, and Chairman of our Corporate Governance Committee. Dr. Shetty joined Janssen Pharmaceutica, Inc. in 1976 ultimately rising to the position of President in 1986 where he led the establishment of Janssen's business in the U.S. From 1999 to 2008 he was Managing Director of Janssen Pharmaceutica, during this time the Janssen Group of companies' global sales grew from $1 billion to $8 billion, and from 2004 until 2012 he was Chairman of the Board of Directors. In Dr. Shetty's most recent role at Johnson & Johnson he was head of Enterprise Supply Chain, where he reported to the CEO and was responsible for the transformation and optimization of Johnson & Johnson's supply chain. Dr. Shetty earned a Ph.D. in Metallurgy and

B.A. Natural Sciences from Trinity College, Cambridge University and a Master of Business Administration from Carnegie Mellon University. Dr. Shetty has served as a member of Agile Therapeutics, Inc.'s board of directors since February 2016. In 2007, Dr. Shetty was bestowed the title of Baron by King Albert II of Belgium for his exceptional merits. He is a member of the Board of Trustees of Carnegie Mellon University, serves on the Board of Governors for GS1 (Global Standards) in Belgium and formerly served on the Corporate Advisory Board of the John Hopkins Carey Business School. In 2016, Dr. Shetty was named as Chairperson of the Vlaams Instituut voor Biotechnologie (VIB), a Belgium based life sciences research institute focused on translating scientific results into pharmaceutical, agricultural and industrial applications. In addition, he was elected *Manager of the Year* in 2004 in Flanders and received a Life-Time Achievement Award in India in 2010. We believe Dr. Shetty's qualifications to sit on our Board include his extensive pharmaceutical experience leading commercial and supply chain operations and his significant education background.

That Dr. Shetty has 37 years of leadership and executive experience in the pharmaceutical industry, that he has significant supply chain knowledge and that he has experience conducting business in the U.S. and Europe, led us to conclude that Dr. Shetty should serve as a director.

Corporate Governance

The Board of Directors oversees our business affairs and monitors the performance of management. In accordance with our corporate governance principles, the Board of Directors does not involve itself in day-to-day operations. The directors keep themselves informed through discussions with the Chairman and Chief Executive Officer and other key executives and by reading the reports and other materials that we send them and by participating in Board of Directors and committee meetings.

Term of Office

Our directors are divided into three classes, designated Class I, Class II and Class III. Class I shall consists of two directors, Class II shall consist of one director, and Class III consists of one director.

The term of each director is set forth below or until their successors are duly elected:

Director	Class	Term (from 2017 Annual Meeting)
David Nicholson	Class I	36 months
Richard Steinhart	Class I	36 months
Sandesh Seth	Class II	12 months
Ajit Shetty	Class III	24 months

Notwithstanding the foregoing, each director shall serve until his successor is duly elected and qualified, or until his or her retirement, death, resignation or removal. In order to implement a classified board of directors, Class I shall serve a three-year term from the date of the 2017 Annual Shareholders Meeting; Class II shall serve a one-year term from the date of the 2017 Annual Shareholders Meeting; and Class III shall serve a two-year term from the date the date of the 2017 Annual Shareholders Meeting. Directors elected at each annual meeting are elected for a three-year term.

Director Independence

We use the definition of “independence” of the NYSE American stock exchange to make this determination. We are listed on the NYSE American under the symbol “ATNM”. NYSE MKT corporate governance rule Sec. 803(A)(2)

provides that an "independent director" means a person other than an executive officer or employee of the company. No director qualifies as independent unless the issuer's board of directors affirmatively determines that the director does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. The following is a non-exclusive list of persons who shall not be considered independent under NYSE American rules:

a director who is, or during the past three years was, employed by the company, other than prior employment as an interim executive officer (provided the interim employment did not last longer than one year);

a director who accepted or has an immediate family member who accepted any compensation from the company in excess of $120,000 during any period of twelve consecutive months within the three years preceding the determination of independence, other than the following:

(i) compensation for board or board committee service;

(ii) compensation paid to an immediate family member who is an employee (other than an executive officer) of the company,

(iii) compensation received for former service as an interim executive officer (provided the interim employment did not last longer than one year); or

(iv) benefits under a tax-qualified retirement plan, or non-discretionary compensation;

a director who is an immediate family member of an individual who is, or at any time during the past three years was, employed by the company as an executive officer;

a director who is, or has an immediate family member who is, a partner in, or a controlling shareholder or an executive officer of, any organization to which the company made, or from which the company received, payments (other than those arising solely from investments in the company's securities or payments under non-discretionary charitable contribution matching programs) that exceed 5% of the organization's consolidated gross revenues for that year, or $200,000, whichever is more, in any of the most recent three fiscal years;

a director who is, or has an immediate family member who is, employed as an executive officer of another entity where at any time during the most recent three fiscal years any of the issuer's executive officers serve on the compensation committee of such other entity; or

a director who is, or has an immediate family member who is, a current partner of the company's outside auditor, or was a partner or employee of the company's outside auditor who worked on the company's audit at any time during any of the past three years.

Under the above-mentioned NYSE American director independence rules, David Nicholson, Ajit S. Shetty, and Richard I. Steinhart are independent directors of the Company.

Chief Executive Officer's Compensation

In a Consulting Agreement Amended and Restated on August 6, 2015, as amended, Mr. Seth entered into an agreement, or the Agreement, with the Company to serve as Executive Chairman. The Company is in the process of adapting the existing Executive Chairman agreement with Mr. Seth to an employment agreement with Mr. Seth as the Company's Chief Executive Officer. The employment agreement will incorporate the material compensatory terms from the Agreement. Mr. Seth is currently paid an annual consulting fee of $525,000. Mr. Seth is also entitled to participate in our bonus program, which shall be established by our Board pursuant to which our Board shall award

bonuses based upon the achievement of written individual and corporate objectives such as our Board shall determine. In September 2014, our Board also granted to Mr. Seth an option to purchase 280,000 common shares at an exercise price of $6.13 per share. The options vest at the rate of 2% of the grant each month from the grant date until fully vested in accordance with the provisions of our Amended and Restated 2013 Stock Plan. The Chairman and CEO shall also be awarded stock option and/or restricted stock grants at our Board's discretion. Mr. Seth's agreement includes severance benefits, including in the event of a change of control of the Company, and to provide for immediate vesting of options in accordance with our Amended and Restated 2013 Stock Plan. The term of the agreement is until February 21, 2021.

If the Company terminates the consulting arrangement other than for cause or if Mr. Seth resigns for good reason, Mr. Seth shall be entitled to the following:

(i) a single lump sum payment equal to twenty-four (24) months of Mr. Seth's compensation (at the rate in effect as of the date of termination);

(ii) continued health benefits for the 24-month period beginning on the date of termination; and

(iii) All outstanding equity awards granted to Mr. Seth under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination and the performance goals with respect to such outstanding performance awards, if any, will deemed satisfied at "target".

If the Company terminates Mr. Seth's consulting arrangement other than for cause or if Mr. Seth resigns for good reason, in any case during the 12-month period beginning on the date of a change in control, Mr. Seth shall be entitled to the following:

(i) a single lump sum payment equal to thirty (30) months of Mr. Seth's compensation (at the rate in effect as of the date of termination);

(ii) continued health benefits for the 30-month period beginning on the date of termination; and

(iii) All outstanding equity awards granted to Mr. Seth under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination and the performance goals with respect to such outstanding performance awards, if any, will deemed satisfied at "target".

Chief Medical Officer Agreement

On December 27, 2016, the Company and Dr. Mark S. Berger entered into an agreement (the "Berger Employment Agreement"), to employ Dr. Berger as the Company's Chief Medical Officer.

Pursuant to the Berger Employment Agreement, Dr. Berger is entitled to the following compensation and benefits:

Salary is $360,000 per year. And Dr. Berger may be entitled to a cash bonus in an amount to be determined by the Board with a target of 30% of the base salary.

The Board granted to Dr. Berger an option to purchase 325,000 common shares of the Company at an exercise price of $1.04 per share.

Vesting Schedule. Twenty-eight percent (28%) of the initial options granted shall vest twelve months after the date of grant and two percent (2%) of the remainder shall vest each month thereafter until fully vested. Such additional options or restricted stock will have an exercise price per share which is equal to fair market value as determined by the Board on the date of the grant. Two percent (2%) of such additional options or stock shall vest each month

thereafter until fully vested. The term of all options granted under this Agreement will be for 10 years from the date of grant, subject to Dr. Berger's continuing service with the Company.

Dr. Berger is also eligible to participate in the Company's benefit plans that are generally provided for executive employees.

Non-Competition. During the term and for a period of two years thereafter, Dr. Berger shall not, either directly or indirectly, engage (as principal, partner, employee, consultant, owner, independent contractor, advisor or otherwise, with or without compensation) in any business that directly or indirectly is developing, or plans to develop, radioimmunotherapies for cancer or any therapy related to bone marrow transplant (the "Competing Business"). Notwithstanding the foregoing, this does not prevent Dr. Berger from being engaged or employed with business that has a Competing Business as part of its business, so long as he is not engaged or involved in any way in the Competing Business at such business or enterprise.

Non-Solicitation. The employment agreement also contains a non-solicitation provision that provides that during the term of employment and for a period of 24 months following the cessation of employment with the company shall not directly or indirectly solicit, induce, recruit or encourage any of the Company's employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for himself or any other person or entity.

Principal Financial Officer Compensation

On September 17, 2015, the Company and Mr. O'Loughlin entered into an employment agreement (the "O'Loughlin Employment Agreement"). He is currently our Principal Financial Officer. Mr. O'Loughlin's employment with the Company is on an "at will" basis, meaning that either Mr. O'Loughlin or the Company may terminate his employment at any time for any reason or no reason, without further obligation or liability, except as provided in the O'Loughlin Employment Agreement.

Salary

Mr. O'Loughlin's current annual base salary is $250,000.

Bonus

Mr. O'Loughlin's is entitled to participate in an executive bonus program pursuant to which the Board of Directors may award him bonuses, based upon the achievement of written individual and corporate objectives such as the board shall determine. Upon the attainment of such performance objectives, in addition to base salary, he shall be entitled to a cash bonus in an amount to be determined by the board with a target of 20% of the base salary.

Options

Mr. O'Loughlin received an initial stock option grant of 100,000 options. The options and restricted stock vest over a four-year period, twenty-eight percent (28%) of the initial options granted vest twelve months after the date of grant and two percent (2%) of the remainder shall vest each month thereafter until fully vested.

Non-Solicitation

Mr. O'Loughlin agreed that during the term of his employment with the Company, and for a period of 24 months following the cessation of employment with the Company for any reason or no reason, he shall not directly or indirectly solicit, induce, recruit or encourage any of our employees or consultants to terminate their relationship with us, or attempt any of the foregoing. For a period of 24 months following cessation of employment with us for any reason or no reason, he shall not attempt to negatively influence any of our clients or customers from purchasing our products or services.

Executive Vice-President, Head of Product Development, Manufacturing and Supply Chain Compensation

On May 26, 2017, the Company and Dr. Nitya Ray entered into an Offer Letter (the "Ray Employment Agreement"). Pursuant to the Ray Employment Agreement, Dr. Ray is entitled to the following compensation and benefits:

Salary is $325,000 per year, and Dr. Ray may be entitled to a cash bonus in an amount to be determined by the Board with a target of 30% of the base salary.

The Board granted to Dr. Ray an option to purchase 250,000 common shares at an exercise price equal to the closing price of our common stock on June 15, 2017.

Vesting Schedule. Twenty-eight percent (28%) of the initial options granted shall vest twelve months after the date of grant and two percent (2%) of the remainder shall vest each month thereafter until fully vested. Two percent (2%) of such additional options shall vest each month thereafter until fully vested. The term of all options granted under this Agreement will be for 10 years from the date of grant, subject to Dr. Ray's continuing service with the Company.

Dr. Ray is also eligible to participate in our benefit plans that are generally provided for executive employees.

Non-Competition. During the term and for a period of three years thereafter, Dr. Ray shall not, either directly or indirectly, engage (as principal, partner, employee, consultant, owner, independent contractor, advisor or otherwise, with or without compensation) in any business that directly or indirectly is developing, or plans to develop, radioimmunotherapies for cancer or any therapy related to bone marrow transplant (the "Competing Business"). Notwithstanding the foregoing, this does not prevent Dr. Ray from being engaged or employed with business that has a Competing Business as part of its business, so long as he is not engaged or involved in any way in the Competing Business at such business or enterprise.

Non-Solicitation. The employment agreement also contains a non-solicitation provision that provides that during the term of employment and for a period of 24 months following the cessation of employment with the company shall not directly or indirectly solicit, induce, recruit or encourage any of the Company's employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for himself or any other person or entity.

Chief Scientific Officer Compensation

On January 2, 2018, the Company and Dr. Dale L. Ludwig entered into an Offer Letter (the "Ludwig Employment Agreement"). Pursuant to the Ludwig Employment Agreement, Dr. Ludwig is entitled to the following compensation and benefits:

Salary is $325,000 per year, and Dr. Ludwig may be entitled to a cash bonus in an amount to be determined by the Board with a target of 30% of the base salary.

The Board granted to Dr. Ludwig an option to purchase 200,000 common shares at an exercise price equal to the closing price of our common stock on January 8, 2017.

Vesting Schedule. Twenty-eight percent (28%) of the initial options granted shall vest twelve months after the date of grant and two percent (2%) of the remainder shall vest each month thereafter until fully vested. Two percent (2%) of such additional options shall vest each month thereafter until fully vested. The term of all options granted under this Agreement will be for 10 years from the date of grant, subject to Dr. Ludwig's continuing service with the Company.

Dr. Ludwig is also eligible to participate in our benefit plans that are generally provided for executive employees.

Non-Competition. During the term and for a period of three years thereafter, Dr. Ludwig shall not, either directly or indirectly, engage (as principal, partner, employee, consultant, owner, independent contractor, advisor or otherwise, with or without compensation) in any business that directly or indirectly is developing, or plans to develop, radioimmunotherapies for cancer or any therapy related to bone marrow transplant (the "Competing Business"). Notwithstanding the foregoing, this does not prevent Dr. Ludwig from being engaged or employed with business that has a Competing Business as part of its business, so long as he is not engaged or involved in any way in the Competing Business at such business or enterprise.

Non-Solicitation. The employment agreement also contains a non-solicitation provision that provides that during the term of employment and for a period of 24 months following the cessation of employment with the company shall not directly or indirectly solicit, induce, recruit or encourage any of the Company's employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for himself or any other person or entity.

Chief Commercial Officer Compensation

On January 31, 2018, the Company and Mr. Kapur entered into an Offer Letter (the "Kapur Employment Agreement"). Pursuant to the Kapur Employment Agreement, Mr. Kapur is entitled to the following compensation and benefits:

Salary is $325,000 per year, and he may be entitled to a cash bonus in an amount to be determined by the Board with a target of 35% of the base salary.

The Board granted to Mr. Kapur an option to purchase 475,000 common shares of the Company at an exercise price equal to the closing price of the Company's common stock on February 6, 2018.

Vesting Schedule. Twenty-eight percent (28%) of the initial options granted shall vest twelve months after the date of grant and two percent (2%) of the remainder shall vest each month thereafter until fully vested. The term of all options granted under this Agreement will be for 10 years from the date of grant, subject to Mr. Kapur's continuing service with the Company.

Mr. Kapur is also eligible to participate in the Company's benefit plans that are generally provided for executive employees.

Non-Competition. During the term and for a period of three (3) years thereafter, Mr. Kapur shall not, either directly or indirectly, engage (as principal, partner, employee, consultant, owner, independent contractor, advisor or otherwise, with or without compensation) in any business that directly or indirectly is developing, or plans to develop, radioimmunotherapies for cancer or any therapy related to bone marrow transplant (the "Competing Business"). Notwithstanding the foregoing, this does not prevent him from being engaged or employed with a business that has a Competing Business as part of its business, so long as he is not engaged or involved in any way in the Competing Business at such business or enterprise.

Non-Solicitation. The employment agreement also contains a non-solicitation provision that, among other things, provides that during the term of employment and for a period of 24 months following the cessation of employment with the Company he shall not directly or indirectly solicit, induce, recruit or encourage any of the Company's employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for himself or any other person or entity.

Board of Directors Meetings and Attendance

During the fiscal year 2017, our Board held 19 meetings and did not act by unanimous written consent. No director attended fewer than 95% of the total number of meetings of our Board and of any committees of which he was a member during the year ended December 31, 2017. It is our policy that directors should make every effort to attend

the annual meeting of stockholders, and each of our directors attended the annual meeting of stockholders in 2017.

Committees of the Board of Directors

Our board of directors has formed three standing committees: audit, compensation and corporate governance. Actions taken by our committees are reported to the full board. Each of our committees has a charter and each charter is posted on our website.

Audit Committee	Compensation Committee	Corporate Governance Committee
Richard I. Steinhart*	Dr. David Nicholson*	Ajit S. Shetty*
Dr. David Nicholson	Richard I. Steinhart	Dr. David Nicholson
Ajit S. Shetty	Ajit S. Shetty	Richard I. Steinhart

* Indicates committee chair

Audit Committee

Our audit committee, which currently consists of three directors, provides assistance to our board in fulfilling its legal and fiduciary obligations with respect to matters involving the accounting, financial reporting, internal control and compliance functions of the company. The board of directors has determined that Mr. Steinhart is an "audit committee financial expert" as defined in Item 407(d)(5)(ii) of Regulation S-K. Our audit committee employs an independent registered public accounting firm to audit the financial statements of the company and perform other assigned duties. Further, our audit committee provides general oversight with respect to the accounting principles employed in financial reporting and the adequacy of our internal controls. In discharging its responsibilities, our audit committee may rely on the reports, findings and representations of the company's auditors, legal counsel, and responsible officers. Our board has determined that all members of the audit committee are financially literate within the meaning of SEC rules and under the current listing standards of the NYSE AMERICAN. Richard I. Steinhart is the chairman of the audit committee. The Audit Committee met four times during 2017. Each member of the Audit Committee was present at least 75% of the Audit Committee meetings held during such director's tenure as a member of the Audit Committee.

Compensation Committee

Our compensation committee, which currently consists of three directors, establishes executive compensation policies consistent with the company's objectives and stockholder interests. The compensation committee met two times during 2017. Our compensation committee also reviews the performance of our executive officers and establishes, adjusts

and awards compensation, including incentive-based compensation, as more fully discussed below. In addition, our compensation committee generally is responsible for:

- establishing and periodically reviewing our compensation philosophy and the adequacy of compensation plans and programs for our directors, executive officers and other employees;
- overseeing our compensation plans, including the establishment of performance goals under the company's incentive compensation arrangements and the review of performance against those goals in determining incentive award payouts;
- overseeing our executive employment contracts, special retirement benefits, severance, change in control arrangements and/or similar plans;
- acting as administrator of any company stock option plans; and
- overseeing outside compensation consultants when engaged.

Our compensation committee periodically reviews the compensation paid to our non-employee directors and the principles upon which their compensation is determined. The compensation committee also periodically reports to the board on how our non-employee director compensation practices compare with those of other similarly situated public corporations and, if the compensation committee deems it appropriate, recommends changes to our director compensation practices to our board for approval.

Outside consulting firms retained by our compensation committee and management also will, if requested, provide assistance to the compensation committee in making its compensation-related decisions.

Corporate Governance Committee

Corporate Governance Committee, which currently consists of three directors, monitors our corporate governance system. The Corporate Governance Committee met two times during 2017.

Nomination of Directors

Board of Director nominations are selected, or recommended for the Board's selection, by a majority of the independent directors. Our independent directors include David Nicholson, Richard I. Steinhart and Ajit S. Shetty. These directors are charged with the responsibility of proposing potential director nominees to the board of directors for consideration. All of our independent directors are independent directors as defined by the rules of the NYSE AMERICAN. Our independent directors use criteria by which it will seek to evaluate candidates to serve on our board of directors. The evaluation methodology includes items such as experience in the biotechnology sector, experience with public companies, executive managerial experience, operations and commercial experience, fundraising experience and contacts in the investment banking industry, personal and skill set compatibility with current board members, industry reputation, knowledge of our company generally, and independence.

Lead Director

In September 2017, our board of directors created the position of Lead Director. Our board of directors designated David Nicholson, an existing independent director, as our Lead Director. Pursuant to the charter of the Lead Director, the Lead Director shall be an independent, non-employee director designated by our board of directors who shall serve in a lead capacity to coordinate the activities of the other non-employee directors, interface with and advise management, and perform such other duties as are specified in the charter or as our board of directors may determine.

Family Relationships

There are no family relationships among any of our officers or directors.

Involvement in Certain Legal Proceedings

To our knowledge, none of our current directors or executive officers has, during the past ten years:

been convicted in a criminal proceeding or been subject to a pending criminal proceeding (excluding traffic violations and other minor offenses);

had any bankruptcy petition filed by or against the business or property of the person, or of any partnership, corporation or business association of which he was a general partner or executive officer, either at the time of the bankruptcy filing or within two years prior to that time;

been subject to any order, judgment, or decree, not subsequently reversed, suspended or vacated, of any court of competent jurisdiction or federal or state authority, permanently or temporarily enjoining, barring, suspending or otherwise limiting, his involvement in any type of business, securities, futures, commodities, investment, banking, savings and loan, or insurance activities, or to be associated with persons engaged in any such activity;

been found by a court of competent jurisdiction in a civil action or by the SEC or the Commodity Futures Trading Commission to have violated a federal or state securities or commodities law, and the judgment has not been reversed, suspended, or vacated;

been the subject of, or a party to, any federal or state judicial or administrative order, judgment, decree, or finding, not subsequently reversed, suspended or vacated (not including any settlement of a civil proceeding among private litigants), relating to an alleged violation of any federal or state securities or commodities law or regulation, any law or regulation respecting financial institutions or insurance companies including, but not limited to, a temporary or permanent injunction, order of disgorgement or restitution, civil money penalty or temporary or permanent cease-and-desist order, or removal or prohibition order, or any law or regulation prohibiting mail or wire fraud or fraud in connection with any business entity; or

been the subject of, or a party to, any sanction or order, not subsequently reversed, suspended or vacated, of any self-regulatory organization (as defined in Section 3(a)(26) of the Exchange Act), any registered entity (as defined in Section 1(a)(29) of the Commodity Exchange Act), or any equivalent exchange, association, entity or organization that has disciplinary authority over its members or persons associated with a member.

Except as set forth in our discussion below in “Certain Relationships and Related Transactions,” none of our directors or executive officers has been involved in any transactions with us or any of our directors, executive officers, affiliates or associates which are required to be disclosed pursuant to the rules and regulations of the SEC.

Code of Ethics

The Company has adopted a code of ethics, a copy of which is attached as Exhibit 14.1 to the Form 8-K filed on January 2, 2013.

Compliance with Section 16 (a) of the Exchange Act

Under Section 16(a) of the Exchange Act, our directors and certain of our officers, and persons holding more than 10 percent of our common stock are required to file forms reporting their beneficial ownership of our common stock and subsequent changes in that ownership with the United States Securities and Exchange Commission.

Based solely upon a review of copies of such forms filed on Forms 3, 4, and 5, and amendments thereto furnished to us, we believe that as of December 31, 2017, our executive officers, directors and greater than 10 percent beneficial owners have complied on a timely basis with all Section 16(a) filing requirements.

Compensation Discussion and Analysis

Our Compensation Committee of our Board of Directors has the responsibility to review, determine and approve the compensation for our executive officers. Further, our Compensation Committee oversees our overall compensation strategy, including compensation policies, plans and programs that cover all employees. In 2016, our Stockholders voted on an advisory basis with respect to our compensation program for named executive officers. Of the votes cast (excluding abstentions and broker non-votes), 69.0% were cast in support of the program. In light of this, in reviewing the executive compensation program for 2016, our Compensation Committee decided to retain the general overall program design, which ties a significant portion of the executives’ pay closely with our performance. In the future, our Compensation Committee will continue to consider the executive compensation program in light of changing circumstances and stockholder feedback.

We currently employ six executive officers, each of whom serves as a “Named Executive Officer” (or NEO) for purposes of SEC reporting: (1) Sandesh Seth, our Chairman and Chief Executive Officer (who we refer to in this Compensation Discussion and Analysis as our CEO); (2) Steve O’Loughlin, our Principal Financial Officer, (3) Mark Berger, our Chief Medical Officer; (4) Nitya Ray, our Executive Vice-President, Head of Product Development, Manufacturing and Supply Chain, (5) Dale Ludwig, our Chief Scientific Officer, and (6) Anil Kapur, our Chief Commercial Officer.

This Compensation Discussion and Analysis sets forth a discussion of the compensation for our NEOs as well as a discussion of our philosophies underlying the compensation for our NEOs and our employees generally.

Objectives of Our Compensation Program

The Compensation Committee’s philosophy seeks to align the interests of our stockholders, officers and employees by tying compensation to individual and company performance, both directly in the form of salary or annual cash incentive payments, and indirectly in the form of equity awards. The objectives of our compensation program enhance our ability to:

attract and retain qualified and talented individuals; and

provide reasonable and appropriate incentives and rewards to our team for building long-term value within our company, in each case in a manner comparable to companies similar to ours.

In addition, we strive to be competitive with other similarly situated companies in our industry. The process of developing pharmaceutical products and bringing those products to market is a long-term proposition and outcomes may not be measurable for several years. Therefore, in order to build long-term value for our company and its stockholders, and in order to achieve our business objectives, we believe that we must compensate our officers and employees in a competitive and fair manner that reflects current company activities but also reflects contributions to building long-term value.

We utilize the services of StreeterWyatt Governance LLC to review compensation programs of peer companies in order to assist the Compensation Committee in determining the compensation levels for our NEOs, as well as for other employees of our company. StreeterWyatt is a recognized independent consulting company and services clients throughout the United States.

Elements of Our Compensation Program and Why We Chose Each

Main Compensation Components

Our company-wide compensation program, including for our NEOs, is broken down into three main components: base salary, performance cash bonuses and potential long-term compensation in the form of stock options or restricted stock awards. We believe these three components constitute the minimum essential elements of a competitive compensation package in our industry.

Salary

Base salary is used to recognize the experience, skills, knowledge and responsibilities required of our NEOs as well as recognizing the competitive nature of the biopharmaceutical industry. This is determined partially by evaluating our peer companies as well as the degree of responsibility and experience levels of our NEOs and their overall contributions to our company. Base salary is one component of the compensation package for NEOs; the other components being cash bonuses, annual equity grants, and company benefit programs. Base salary is determined in advance whereas the other components of compensation are awarded in varying degrees following an assessment of the performance of a NEO. This approach to compensation reflects the philosophy of our board of directors and its Compensation Committee to emphasize and reward, on an annual basis, performance levels achieved by our NEOs.

Performance Bonus Plan

We have a performance bonus plan under which bonuses are paid to our NEOs based on achievement of company performance goals and objectives established by the Compensation Committee and/or our board of directors as well as on individual performance. The bonus program is discretionary and is intended to: (i) strengthen the connection between individual compensation and our company's achievements; (ii) encourage teamwork among all disciplines within our company; (iii) reinforce our pay-for-performance philosophy by awarding higher bonuses to higher performing employees; and (iv) help ensure that our cash compensation is competitive. Depending on the cash position of the company, the Compensation Committee and our board of directors have the discretion to not pay cash bonuses in order that we may conserve cash and support ongoing development programs and commercialization efforts. Regardless of our cash position, we consistently grant annual merit-based stock options to continue incentivizing both our senior management and our employees.

Based on their employment agreements, each NEO is assigned a target payout under the performance bonus plan, expressed as a percentage of base salary for the year. Actual payouts under the performance bonus plan are based on the achievement of corporate performance goals and an assessment of individual performance, each of which is separately weighted as a component of such officer's target payout. For the NEOs, the corporate goals receive the highest weighting in order to ensure that the bonus system for our management team is closely tied to our corporate performance. Each employee also has specific individual goals and objectives as well that are tied to the overall corporate goals. For employees, mid-year and end-of-year progress is reviewed with the employees' managers.

Equity Incentive Compensation

We view long-term compensation, currently in the form of stock options and restricted stock generally vesting in annual increments over four years, as a tool to align the interests of our NEOs and employees generally with the creation of stockholder value, to motivate our employees to achieve and exceed corporate and individual objectives and to encourage them to remain employed by the company. While cash compensation is a significant component of employees' overall compensation, the Compensation Committee and our board of directors (as well as our NEOs) believe that the driving force of any employee working in a small biotechnology company should be strong equity participation. We believe that this not only creates the potential for substantial longer term corporate value but also serves to motivate employees and retain their loyalty and commitment with appropriate personal compensation.

Other Compensation

In addition to the main components of compensation outlined above, we also have provided contractual severance and/or change in control benefits to several employees including our Executive Chairman and CEO. The change in control benefits for all applicable persons have a "double trigger." A double-trigger means that the executive officers will receive the change in control benefits described in the agreements only if there is both (1) a Change in Control of our company (as defined in the agreements) and (2) a termination by us of the applicable person's employment "without cause" or a resignation by the applicable persons for "good reason" (as defined in the agreements) within a specified time period prior to or following the Change in Control. We believe this double trigger requirement creates the potential to maximize stockholder value because it prevents an unintended windfall to management as no benefits are triggered solely in the event of a Change in Control while providing appropriate incentives to act in furtherance of a change in control that may be in the best interests of the stockholders. We believe these severances or change in control benefits are important elements of our compensation program that assist us in retaining talented individuals at the executive and senior managerial levels and that these arrangements help to promote stability and continuity of our executives and senior management team. Further, we believe that the interests of our stockholders will be best served if the interests of these members of our management are aligned with theirs. We believe that providing change in control benefits lessens or eliminates any potential reluctance of members of our management to pursue potential change in control transactions that may be in the best interests of the stockholders. We also believe that it is important to provide severance benefits to members of our management, to promote stability and focus on the job at hand.

We also provide benefits to the executive officers that are generally available to all regular full-time employees of our company, including our medical and dental insurance, and a 401(k) plan. Further, we do not have deferred compensation plans, pension arrangements or post-retirement health coverage for our executive officers or employees. All of our employees not specifically under contract are "at-will" employees, which means that their employment can be terminated at any time for any reason by either us or the employee.

Determination of Compensation Amounts

A number of factors impact the determination of compensation amounts for our NEOs, including the individual's role in the company and individual performance, length of service with the company, competition for talent, individual compensation package, assessments of internal pay equity and industry data. Stock price performance has generally not been a factor in determining annual compensation because the price of our common stock is subject to a variety of factors outside of our control.

Industry Survey Data

In collaboration with StreeterWyatt, we establish and maintain a list of peer companies to best assure ourselves that we are compensating our executives on a fair and reasonable basis, as set forth above under the heading "Objectives of our Compensation Program." We also utilize StreeterWyatt-prepared data for below-executive level personnel, which data focuses on biotechnology companies that can be considered peers in terms of numerous variables including phase of development, size, therapeutic and technological focus among others. The availability of peer data is used by the Compensation Committee strictly as a guide in determining compensation levels with regard to salaries, cash bonuses and performance related annual equity grants to all employees. However, the availability of this data does not imply that the Compensation Committee is under any obligation to exactly follow peer companies in compensation matters.

Determination of Base Salaries

As a guideline for NEO base salary, we perform formal benchmarks against respective comparable positions in our established peer group. We adjust salaries based on our assessment of our NEOs' levels of responsibility, experience, overall compensation structure and individual performance. The Compensation Committee is not obliged to raise salaries purely on the availability of data. Merit-based increases to salaries of executive officers are based on our assessment of individual performance and the relationship to applicable salary ranges. Cost of living adjustments may also be a part of that assessment.

Performance Bonus Plan

Concurrently with the beginning of each calendar year, preliminary corporate goals that reflect our business priorities for the coming year are prepared by the CEO with input from the other executive officers. These goals are weighted by relative importance. The draft goals and proposed weightings are presented to the Compensation Committee and the Board and discussed, revised as necessary, and then approved by our board of directors. The Compensation Committee then reviews the final goals and their weightings to determine and confirm their appropriateness for use as performance measurements for purposes of the bonus program. The goals and/or weightings may be re-visited during the year and potentially restated in the event of significant changes in corporate strategy or the occurrence of significant corporate events. Following the agreement of our board of directors on the corporate objectives, the goals are then shared with all employees in a formal meeting(s), and are reviewed periodically throughout the year.

Determination of Equity Incentive Compensation

To assist us in assessing the reasonableness of our equity grant amounts, we have reviewed StreeterWyatt supplied information. Such information included equity data from a cross-section of similar companies in our industry.

Equity Grant Practices

All stock options and/or restricted stock granted to the NEOs and other executives are approved by the Compensation Committee. Exercise prices for options are set at the closing price of our common stock on the date of grant. Grants are generally made: (i) on the employee's start date and (ii) at board of director meetings held each February and following annual performance reviews. However, grants have been made at other times during the year. The size of year-end grants for each NEO is assessed against our internal equity guidelines. Current market conditions for grants

for comparable positions and internal equity may also be assessed. Also, grants may be made in connection with promotions or job-related changes in responsibilities. In addition, on occasion, the Compensation Committee may make additional special awards for extraordinary individual or company performance.

Compensation Setting Process

At the February meetings of our board of directors and the Compensation Committee, overall corporate performance and relative achievement of the corporate goals for the prior year are assessed. The relative achievement of each goal is assessed and quantified and the summation of the individual components results in a corporate goal rating, expressed as percentages. The Compensation Committee then approves the final disbursement of salary increases, cash bonuses and option or restricted stock grants.

The Compensation Committee looks to the CEO’s performance assessments of the other NEOs and his recommendations regarding a performance rating for each, as well as input from the other members of our board of directors. These recommendations may be adjusted by the Compensation Committee prior to finalization. For the CEO, the Compensation Committee evaluates his performance, taking into consideration input from the other members of our board of directors, and considers the achievement of overall corporate objectives by both the CEO specifically and the company generally. The CEO is not present during the Compensation Committee’s deliberations regarding his compensation.

The Compensation Committee has the authority to directly engage, at our company's expense, any compensation consultants or other advisors (such as StreeterWyatt) that it deems necessary to determine the amount and form of employee, executive and director compensation. In determining the amount and form of employee, executive and director compensation, the Compensation Committee has reviewed and discussed historical salary information as well as salaries for similar positions at comparable companies. However, the availability of this data does not imply that the Compensation Committee is under any obligation to exactly follow peer companies' compensation practices.

We paid consultant fees to StreeterWyatt of $10,000 during the year ended December 31, 2017. NEOs may have indirect input in the compensation results for other executive officers by virtue of their participation in the performance review and feedback process for the other executive officers.

ITEM 11. EXECUTIVE COMPENSATION

Summary Compensation Table

The following table provides information regarding the compensation earned during the fiscal years ended December 31, 2017 and 2016 for our named executive officers.

Name/Position	Year	Salary	Bonus (1)	Option Awards	All Other Compensation	Total
Sandesh Seth (2)	2017	$306,250	$-	$-	$ -	$306,250
Kaushik J. Dave,	2017	$577,942	$110,000	$244,766	$ -	$932,708
Former CEO (3)	2016	$405,000	$105,000	$571,150	$ 98,593	$1,179,743
Mark Berger	2017	$343,750	$-	$234,695	$ -	$578,445
Dragan Cicic,	2017	$389,125	$45,000	$73,430	$ -	$507,555
Former COO (4)	2016	$280,500	$40,000	$71,394	$ -	$391,894
Nitya Ray	2017	$177,273	$-	$198,896	$ -	$376,169
Steve O'Loughlin	2017	$235,152	$50,000	$97,907	$ -	$383,059
	2016	$192,610	$10,000	$71,394	$ -	$274,004

(1) The bonus disclosed in this column relates to performance in the prior year, but was contingent upon board approval, and was paid in the year disclosed.

(2) Mr. Seth was appointed Chief Executive Officer on June 5, 2017. Prior to this, Mr. Seth was Executive Chairman and was paid an annual consulting fee.

(3) Dr. Dave resigned from the company on May 12, 2017. His 2017 salary includes a severance of $410,000.

(4) Dr. Cicic resigned from the company on May 12, 2017. His 2017 salary includes a severance of $283,000.

As an “emerging growth company” we will not be required to provide information relating to the ratio of total compensation of our Chief Executive Officer to the median of the annual total compensation of all of our employees, as required by the Investor Protection and Securities Reform Act of 2010, which is part of the Dodd-Frank Wall Street Reform and Consumer Protection Act.

Director Compensation

The following table sets forth the compensation of our non-employee directors for the 2017 fiscal year:

Name	Fees Earned or Paid in Cash	Stock Awards	**Option Awards (1)**	All Other Compensation	Total
David Nicholson (2)	$59,000	-	73,430	-	$132,430
Ajit J. Shetty (3)	39,694	-	82,903	-	$122,597
Richard Steinhart	$63,000	-	73,430	-	$136,430
Sergio Traversa (4)	$58,500	-	73,430	-	$131,930

(1) At the end of fiscal year 2017, the aggregate number of option awards outstanding for each director was as follows: (i) for Dr. Nicholson, 274,900, (ii) for Dr. Shetty, 75,000, (iii) for Mr. Steinhart, 224,950, and (iv) for Mr. Traversa, 172,950.

(2) Mr. Nicholson was named Lead Director in September 2017 and receives an additional $10,000 per year for his role as Lead Director.

(3) Dr. Shetty was appointed a director on March 28, 2017.

(4) Mr. Traversa resigned from the company on June 6, 2017.

In accordance with SEC rules, the amounts shown reflect the aggregate grant date fair value of option awards granted to Non-Employee Directors during 2017, computed in accordance with Financial Accounting Standards Board Accounting Standards Codification Topic 718.

Our non-employee directors are paid an annual fee of $40,000 and receive annual option grants. Board committee members will receive the following compensation:

BOD Committee	Chairman	Member
Audit	$ 15,000	$ 6,000
Compensation	$ 10,000	$ 5,000
Corporate Governance	$ 7,500	$ 3,000

Outstanding Equity Awards at Fiscal Year-End Table

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END - 2017

The following table sets forth all unexercised options and unvested restricted stock that have been awarded to our named executives by the Company and were outstanding as of December 31, 2017.

	Option Awards					Stock Awards			
Name (a)	Number of Securities Underlying Unexercised Options (#) (Exercisable) (b)	Number of Securities Underlying Unexercised Options (#) (Unexercisable) (c)	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) (d)	Option Exercise Price ($) (e)	Option Expiration Date (f)	Number of Shares or Units of Stock That Have Not Vested (#) (g)	Market Value of Shares or Units of Stock That Have Not Vested ($) (h)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#) (i)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($) (j)
Sandesh Seth	24,975	-	-	1.50	8/30/2022	-	-	-	-
	24,975	-	-	1.50	12/19/2022	-	-	-	-
	218,400	61,600	-	6.13	9/23/2024	-	-	-	-
	102,000	48,000	-	3.58	2/15/2025	-	-	-	-
	200,000	300,000	-	1.99	4/15/2026	-	-	-	-
	217,000	533,000	-	1.39	3/14/2027	-	-	-	-
Mark Berger	-	325,000	-	1.04	1/17/2027	-	-	-	-
Nitya Ray	-	250,000	-	1.15	6/13/2027	-	-	-	-
Steve O'Loughlin	56,000	44,000	-	1.79	9/28/2025	-	-	-	-
	20,000	30,000	-	1.99	4/15/2026	-	-	-	-

38,500	61,500	-	1.39	3/14/2027	-	-	-	-

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Indemnification of Directors and Officers

Section 102(b)(7) of the Delaware General Corporation Law allows a corporation to provide in its certificate of incorporation that a director of the corporation will not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except where the directors breached the duty of loyalty, failed to act in good faith, engaged in intentional misconduct or knowingly violated a law, authorized the payment of a dividend or approved a stock repurchase in violation of Delaware corporate law or obtained an improper personal benefit. Our certificate of incorporation provides for this limitation of liability.

Section 145 of the General Corporation Law of the State of Delaware provides that a Delaware corporation may indemnify any person who was, is or is threatened to be made, party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of such corporation), by reason of the fact that such person is or was an officer, director, employee or agent of such corporation or is or was serving at the request of such corporation as a director, officer employee or agent of another corporation or enterprise. The indemnity may include expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding, provided such person acted in good faith and in a manner he reasonably believed to be in or not opposed to the corporation's best interests and, with respect to any criminal action or proceeding, had no reasonable cause to believe that his conduct was illegal. A Delaware corporation may indemnify any persons who are, or were, a party to any threatened, pending or completed action or suit by or in the right of the corporation by reason of the fact that such person is or was a director, officer, employee or agent of another corporation or enterprise. The indemnity may include expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit, provided such person acted in good faith and in a manner he reasonably believed to be in or not opposed to the corporation's best interests, provided that no indemnification is permitted without judicial approval if the officer, director, employee or agent is adjudged to be liable to the corporation. Where an officer or director is successful on the merits or otherwise in the defense of any action referred to above, the corporation must indemnify him against the expenses which such officer or directors has actually and reasonably incurred.

Section 145 further authorizes a corporation to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or enterprise, against any liability asserted against him and incurred by him in any such capacity, or arising out of his status as such, whether or not the corporation would otherwise have the power to indemnify him under Section 145.

Our bylaws provide that we will indemnify our directors and officers to the fullest extent authorized by the General Corporation Law of the State of Delaware. Expenses (including attorneys' fees) incurred by an officer or director of the Corporation in defending any civil, criminal, administrative or investigative action, suit or proceeding may be paid by the Company in advance of the final disposition of such action, suit or proceeding upon receipt of an undertaking

by or on behalf of such director or officer to repay such amount if it shall ultimately be determined that such person is not entitled to be indemnified by the Company as authorized under Delaware law. Such expenses (including attorneys' fees) incurred by former directors and officers or other employees and agents of the Company or by persons serving at the request of the Company as directors, officers, employees or agents of another corporation, partnership, joint venture, trust or other enterprise may be so paid upon such terms and conditions, if any, as the Company deems appropriate.

The indemnification rights set forth above shall not be exclusive of any other right which an indemnified person may have or hereafter acquire under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity while holding such office, and shall continue as to a person who has ceased to be a director, officer, employee, or agent and shall inure to the benefit of the heirs, executors, and administrators of such person.

We maintain a general liability insurance policy that covers liabilities of directors and officers of our corporation arising out of claims based on acts or omissions in their capacities as directors or officers. We have also entered in to Indemnification Agreements with our executive officers and directors.

Actinium Holdings Ltd. Indemnification

Pursuant to a letter Agreement dated, July 2011, between API and Actinium Holdings Ltd., API agreed to indemnify certain officers and directors of a predecessor company. Pursuant to the agreement, API will not, and will not permit any of its subsidiaries to, eliminate or otherwise reduce the right of any present or former director or officer of API, Actinium Pharmaceuticals Limited, a Bermuda corporation that merged into the Company ("APL"), and/or the present and former subsidiaries of API or APL (all such entities, collectively, the "Company Group") who currently serves, or at any time prior to the date thereof served, in any such capacity (all such directors and officers, collectively "Company Group Managers") to be indemnified against any costs or expenses (including reasonable attorneys' fees), judgments, fines, losses, claims, damages or liabilities of any nature whatsoever, incurred in connection with any claim, action, suit, proceeding or investigation, whether civil, criminal, administrative or investigative, arising out of or pertaining to matters existing or occurring on, prior to or after the date thereof, whether asserted or claimed prior to, on or after the date thereof, arising, in whole or in part, out of or pertaining to the fact that he or she is or was, or at any time in the future will have been, a Company Group Manager or is or was, or at any time in the future will have been, serving at the request of any entity in the Company Group (or at the request of any present or former affiliate (as such term is defined in Rule 405 under the Securities Act of 1933, as amended) of API for and on behalf of any entity in the Company Group as a director, officer, employee, fiduciary or agent of another corporation, partnership, joint venture, trust, other entity or otherwise, or to be advanced expenses, in any of the foregoing cases, to the fullest extent that such Company Group Manager would be entitled to be indemnified or advanced expenses under applicable law, API's or any such subsidiaries' certificate or articles of incorporation or bylaws or equivalent documents or any applicable contract (collectively, the "Applicable Documents"), in each case, as in effect on the date thereof.

The indemnification rights set forth above shall not be exclusive of any other right which an indemnified person may have or hereafter acquire under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise, both as to action in such person's official capacity and as to action in another capacity while holding such office, and shall continue as to a person who has ceased to be a director, officer, employee, or agent and shall inure to the benefit of the heirs, executors, and administrators of such person.

We maintain a general liability insurance policy that covers liabilities of directors and officers of our corporation arising out of claims based on acts or omissions in their capacities as directors or officers.

At the present time, there is no pending litigation or proceeding involving a director, officer, employee, or other agent of ours in which indemnification would be required or permitted. We are not aware of any threatened litigation or proceeding that may result in a claim for such indemnification.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table shows the beneficial ownership of our Common Stock as of March 16, 2018 held by (i) each person known to us to be the beneficial owner of more than five percent (5%) of any class of our shares; (ii) each director; (iii) each executive officer; and (iv) all directors and executive officers as a group.

Beneficial ownership is determined in accordance with the rules of the SEC, and generally includes voting power and/or investment power with respect to the securities held. Shares of Common Stock subject to options and warrants currently exercisable or which may become exercisable within 60 days of March 14, 2018, are deemed outstanding and beneficially owned by the person holding such options or warrants for purposes of computing the number of shares and percentage beneficially owned by such person, but are not deemed outstanding for purposes of computing the percentage beneficially owned by any other person. Except as indicated in the footnotes to this table, the persons or entities named have sole voting and investment power with respect to all shares of our Common Stock shown as beneficially owned by them.

The percentages below are based on fully diluted shares of our Common Stock equivalents as of March 10, 2018. Unless otherwise indicated, the principal address of each of the persons below is c/o Actinium Pharmaceuticals, Inc., 275 Madison Ave, 7th floor, New York, NY 10016.

Unless otherwise indicated, the principal address of each of the persons below is c/o Actinium Pharmaceuticals, Inc., 275 Madison Ave, 7th floor, New York, NY 10016.

Executive Officers and Directors	**Number of Shares of Common Stock and Preferred Stock Beneficially Owned**		**Percentage of Ownership[(a)]**	
Sandesh Seth	1,376,384	(1)	1.2	%
Steve O'Loughlin	162,000	(2)	*	%
Mark Berger, MD	96,000	(3)	*	%
Nitya G. Ray, PhD	30,000	(4)	*	%
Anil Kapur	40,000	(5)	*	%
Dale L. Ludwig	-	(6)	*	%
David Nicholson, PhD	187,900	(7)	*	%
Ajit S. Shetty, PhD	43,730	(8)	*	%
Richard I. Steinhart, MBA	147,450	(9)	*	%
All Directors and Officers as a Group (9 persons)	2,078,464	(10)	**1.9**	%
All other 5% holders				
Anson Funds Management LP Anson Management GP LLC Bruce R. Winson Anson Advisors Inc.	6,000,000		5.5	%

Amin Nathoo
Moez Kassam
5950 Berkshire Lane, Suite 210
Dallas Texas 75225

155 University Ave, Suite 207
Toronto, ON M5H 3B7

* less than 1%

(a) Based on 110,198,660 shares of Common Stock outstanding as of March 16, 2018

(1) Includes warrants to purchase 64,747 shares of Common Stock of the Company at an exercise price of $0.784 per share, exercisable on a cashless basis, warrants to purchase 99,617 of Common Stock of the Company at an exercise price of $0.784 per share, exercisable on a cashless basis issued to Amrosan, LLC, a partnership in which the majority member interest is owned by the family of Mr. Seth, warrants to purchase 57,212 shares of Common Stock at an exercise price of $2.34 per share, Series A warrants to purchase 13,125 shares of Common Stock at an exercise price of $0.60 per share and Series B warrants to purchase 39,375 shares at an exercise price of $0.70 per share. Excludes warrants to purchase 375,556 shares of Common Stock of the Company at par value per share, exercisable on a cashless basis issued to Amrosan, LLC as the warrants are not exercisable upon less than 90 days' notice. The holder may waive the 90-day exercise notice requirement by giving 65 days prior notice of such waiver. Excludes 353,023 warrants issued to Carnegie Hill Asset Partners and irrevocable trust linked to Mr. Seth's family and 721,068 warrants issued to Bioche Asset Management, LLC, a partnership in which the majority member interest is owned by the family of Mr. Seth whose terms are the same as those issued to Amrosan LLC. Also excludes warrants held by the Placement Agent or its affiliates in connection with the offering of common stock and Series A and Series B warrants that closed on December 19, 2012 (the "2012 Offering"), the Bridge Notes Financing, the Series E financing and by designees of James Capital Group, LLC in connection with the Share Exchange. On August 30, 2012 and December 12, 2012, Mr. Seth was granted options to purchase 49,950 shares of Common Stock at an exercise price of $1.50 per share. On September 13, 2014, Mr. Seth was granted 280,000 options with an exercise price of $6.13 per share. On February 18, 2015, Mr. Seth was granted 150,000 options with an exercise price of $3.58 per share. On April 15, 2016, Mr. Seth was granted an option to purchase 500,000 shares of the Common Stock at an exercise price of $1.99 per share. On March 14, 2017, Mr. Seth was granted options to purchase 750,000 shares of Common Stock at an exercise price of $1.39 per share. All options are subject to vesting. Within 60 days of March 10, 2018, 953,975 options will have vested. Includes 128,333 shares of Common Stock.

(2) On October 1, 2015, Mr. O'Loughlin was granted 100,000 options with an exercise price of $1.79 per share. On April 14, 2016, Mr. O'Loughlin was granted options to purchase of 50,000 shares of Common Stock at an exercise price of $1.99 per share. On March 14, 2017, Mr. O'Loughlin was granted options to purchase 100,000 shares of Common Stock at an exercise price of $1.39 per share. All options are subject to vesting. Within 60 days of March 10, 2018, 138,500 options will have vested. Includes Series A warrants to purchase 2,500 shares of Common Stock at an exercise price of $0.60 per share and Series B warrants to purchase 7,500 shares at an exercise price of $0.70 per share. Includes 13,500 shares of Common Stock.

(3) On January 17, 2017, Dr. Berger was granted an option to purchase 325,000 shares with an exercise price of $1.04 per share. Within 60 days of March 10, 2018, 91,000 options will have vested. Includes 5,000 shares of Common Stock.

(4) On June 15, 2017, Dr. Ray was granted an option to purchase 250,000 shares with an exercise price of $1.15 per share. No options are exercisable within 60 days of March 10, 2018. Includes Series A warrants to purchase 2,500 shares of Common Stock at an exercise price of $0.60 per share and Series B warrants to purchase 7,500 shares at an exercise price of $0.70 per share. Includes 20,000 shares of Common Stock.

(5) On February 6, 2018, Mr. Kapur was granted an option to purchase 475,000 shares with an exercise price of $0.64 per share. No options are exercisable within 60 days of March 10, 2018. Includes 40,000 shares of Common Stock.

(6) On January 8, 2018, Dr. Ludwig was granted an option to purchase of 200,000 shares with an exercise price of $0.72 per share. No options are exercisable within 60 days of March 10, 2018.

(7) On February 12, 2012, Dr. Nicholson was granted options to purchase of 49,950 shares of Common Stock at an exercise price of $0.784 per share and on August 12, 2012 and December 19, 2012, Dr. Nicholson was granted options to purchase 49,950 shares of Common Stock at an exercise price of $1.50 per share. On February 18, 2015, Dr. Nicholson was granted 25,000 options with an exercise price of $3.58 per share. On April 15, 2016, Dr. Nicholson was granted an option to purchase 75,000 shares of the Common Stock at an exercise price of $1.99 per share. On March 14, 2017, Dr. Nicholson was granted options to purchase 75,000 shares of Common Stock at an exercise price of $1.39 per share. All options are subject to vesting. Within 60 days of March 10, 2018, 177,900 options will have vested. Includes 10,000 shares of Common Stock.

(8) On March 28, 2017, Dr. Shetty was granted an option to purchase 75,000 shares of Common Stock with an exercise price of $1.58 per share. Within 60 days of March 10, 2018, 21,000 options will have vested. Includes 22,730 shares of Common Stock.

(9) On December 16, 2013, Mr. Steinhart was granted options to purchase 49,950 shares of Common Stock at an exercise price of $6.70 per share. On February 18, 2015, Mr. Steinhart was granted an option to purchase 25,000 shares of Common Stock at an exercise price of $3.58 per share. On April 15, 2016, Mr. Steinhart was granted an option to purchase 75,000 shares of the Common Stock at an exercise price of $1.99 per share. On March 14, 2017, Mr. Steinhart was granted options to purchase 75,000 shares of Common Stock at an exercise price of $1.39 per share. All options are subject to vesting. Within 60 days of March 10, 2018, 130,950 options will have vested. Includes Series A warrants to purchase 1,750 shares of Common Stock at an exercise price of $0.60 per share and Series B warrants to purchase 5,250 shares at an exercise price of $0.70 per share. Includes 7,000 shares of Common Stock.

(10) Includes warrants to purchase 301,076 shares of Common Stock, vested options to purchase 1,533,325 shares of Common Stock and 244,063 shares of Common Stock.

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

Transactions with Related Persons

On February 11, 2015, the Company completed a public offering of common shares and warrants, representing gross proceeds of approximately $20.0 million and a net amount of approximately $18.5 million after deducting the underwriting discount and the other offering expenses. Laidlaw & Company (UK) Ltd., of which Mr. Seth, Chairman and CEO was the former Head of Healthcare Investment Banking, acted as sole book-running manager for the offering. The offering was made pursuant to a shelf registration statement (File No. 333-194768) previously filed with and declared effective by the U.S. Securities and Exchange Commission.

In an agreement dated March 11, 2015 and effective August 11, 2014, Mr. Seth entered into a consulting agreement with the Company to serve as Executive Chairman of the Company. The agreement was amended and restated on August 6, 2015. Mr. Seth is also entitled to participate in a Company bonus program, which shall be established by the Board pursuant to which the Board shall award bonuses to the consultant, based upon the achievement of written individual and corporate objectives such as the Board shall determine. During the term of the agreement, the performance cash bonus shall be at least at the same amount as the performance cash bonus paid to the Chief Executive Officer of the Company. On September 23, 2014, the Board also granted to the Executive Chairman an option to purchase 280,000 common shares of the Company at an exercise price of $6.13 per share. The options vest at the rate of 2% of the grant each month from the grant date until fully vested in accordance with the provisions of the Company’s Amended and Restated 2013 Stock Plan. In March 2017, Mr. Seth was awarded stock options to purchase 750,000 shares for $1.39, having an option award value of $734,301and in April 2017, Mr. Seth received a bonus as Executive Chairman of $215,000.

On December 21, 2015, Actinium entered into an Investor Rights Agreement (the “Investor Rights Agreement”) with Memorial Sloan Cancer Center (“MSKCC”). Under the terms of the Investor Rights Agreement, MSKCC has agreed to forebear from transferring or otherwise disposing of its approximately 5.7 million Actinium shares (other than pursuant to a piggyback registration as described below) until the start of the Actimab-A Phase 2 clinical study (but, in no event until later than March 31, 2016). Thereafter MSKCC shall be permitted to sell its shares subject to a weekly volume limitation of 150,000 shares (which limit may be increased to up to 250,000 shares per week to the extent any prior weekly allotments were not fully used) and applicable law so long as MSKCC maintains at least 25% of its current shareholding in Actinium through December 31, 2016. Actinium has granted MSKCC piggyback registration rights that would be triggered in the event Actinium were to engage in a public registered offering of its shares for its own account where other shareholders are participating as selling shareholders or where such public registered offering is for the account of other selling shareholders. In addition, following December 31, 2016, Actinium has granted MSKCC unlimited Form S-3 registration rights with respect to its shares. As of December 31, 2017, MSKCC owned 1,230,954 shares of our common stock.

Non-Competition Agreements

Our executive officers have signed non-competition agreements, which provide that all inventions become the immediate property of us and require invention assignments. The agreements provide that the executive officers will hold proprietary information in the strictest confidence and not use the confidential information for any purpose not expressly authorized by us.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The aggregate fees billed for the fiscal years ended December 31, 2017 and 2016, respectively, for professional services rendered by GBH CPAs, PC for the audits of the Company's annual financial statements included in Form 10-K, or Audit Fees, tax compliance, advice, and planning, or Tax Fees, and all other fees:

	Year Ended December 31, 2017	Year Ended December 31, 2016
Audit Fees	$ 116,500	$ 123,168
Audit – Related Fees	60,800	23,750
Tax Fees	-	-
All Other Fees	-	-
Total	$ 177,300	$ 146,918

Pre-Approval Policy

In 2015, the Audit Committee adopted policies and procedures for the pre-approval of audit and non-audit services performed by the independent registered public accountants pursuant to which the Audit Committee generally is required to pre-approve the audit and permissible non-audit services performed by the independent registered public accountants in order to ensure that the provision of such services does not impair the registered accountants' independence.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

Exhibit Number	Description
1.1	Underwriting Agreement, dated September 28, 2016, by and between H.C. Wainwright & Co., LLC and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 1.1 to Form 8-K filed on September 29, 2016).
1.2	At Market Issuance Sales Agreement, dated March 16, 2017, between FBR Capital Markets & Co. and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 1.2 to Form S-3 filed on March 16, 2017).
1.3	Amended and Restated At-the-Market Market Issuance Sales Agreement, dated July 3, 2017, among FBR Capital Markets & Co., MLV & Co. LLC, JonesTrading Institutional Services LLC, and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.5 to Form 10-Q filed on August 4, 2017).
1.4	Underwriting Agreement, dated as of July 28, 2017, by and between Actinium Pharmaceuticals, Inc. and Oppenheimer & Co. Inc. as representative of the several underwriters party thereto (incorporated by reference to Exhibit 1.1 to Form 8-K filed on July 28, 2017).
1.5	Dealer-Manager Agreement, dated February 15, 2018, between Maxim Group LLC and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 1.1 to Form 8-K filed on February 15, 2018).
2.1	Share Exchange Agreement, dated December 28, 2012, by and among Cactus Ventures, Inc., Actinium Pharmaceuticals, Inc., Diane S. Button, and the shareholders of Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 2.1 to Form 8-K filed on January 2, 2013).
2.2	Share Exchange Agreement, dated March 11, 2013, by and among Cactus Ventures, Inc., Actinium Pharmaceuticals, Inc, and the shareholders of Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.1 to Form 8-K filed on March 11, 2013).
2.3	Share Exchange Agreement, dated August 22, 2013, by and among Actinium Pharmaceuticals, Inc, Actinium Corporation, and the shareholders of Actinium Corporation (incorporated by reference to Exhibit 2.3 to Form S-1/A filed on August 22, 2013).
3.1	Certificate of Incorporation of Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 3.1 of the Company's Form 8-K filed with the SEC on April 17, 2013).
3.2	Amended and Restated Bylaws of Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 3.1 to Form 10-Q filed on August 12, 2014).
3.3	Certificate of Amendment to Certificate of Incorporation filed January 7, 2014 (incorporated by reference to Exhibit 3.5 to Form S-1 filed on January 31, 2014).
3.4	Certificate of Amendment to Certificate of Incorporation filed February 3, 2014. (incorporated by reference to Exhibit 3.1 to Form 8-K filed on February 7, 2014).
3.5	Certificate of Amendment to Certificate of Incorporation (incorporated by reference to Exhibit 3.1 to Form 8-K filed on March 4, 2015).
3.6	Amendment to Amended and Restated Bylaws, dated August 6, 2015 (incorporated by reference to Exhibit 3.1 to Form 10-Q filed on August 7, 2015).
3.7	Second Amendment to Amended and Restated Bylaws, as amended, dated November 20, 2015 (incorporated by reference to Exhibit 3.1 to Form 8-K filed on November 27, 2015).

3.8	Certificate of Amendment to Actinium's Certificate of Incorporation, as amended, filed on February 26, 2018 (incorporated by reference to Exhibit 3.1 to Form 8-K filed on February 26, 2018).
4.1	Form of Common Stock Warrant, dated December 27, 2013 and January 10, 2014 (incorporated by reference to Exhibit 4.8 to Form S-1 filed on January 31, 2014).
4.2	Form of Warrant (incorporated by reference to Exhibit 4.1 to Form 8-K filed on February 6, 2015).
4.3	Form of Warrant (incorporated by reference to Exhibit 10.1 to Form 8-K filed on July 28, 2017).
4.4	Form of Warrant Agency Agreement between Action Stock Transfer Corporation and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 4.1 to Form 8-K filed on February 15, 2018).
4.5	Form of Series A Warrant (incorporated by reference to Exhibit 4.2 to Form 8-K filed on February 15, 2018).
4.6	Form of Series B Warrant (incorporated by reference to Exhibit 4.3 to Form 8-K filed on February 15, 2018).
4.7	Form of Non-Transferable Subscription Rights Certificate (incorporated by reference to Exhibit 4.4 to Form 8-K filed on February 15, 2018).
4.8	Revised Form of Non-Transferable Subscription Rights Certificate. (incorporated by reference to Exhibit 4.1 to Form 8-K filed on February 26, 2018).

10.1	License, Development and Commercialization Agreement between Sloan-Kettering Institute of Cancer Research, and Actinium Pharmaceuticals, Inc., dated February 11, 2002; as amended by the First Amendment dated August 7, 2006 (incorporated by reference to Exhibit 10.9 to Form 8-K/A filed on January 4, 2013).
10.2	Phase 1/2 Study on the safety and efficiency of 225ACAc-HuM195 in patients with advanced Myeloid malignancies with Millennix Oncology, Averion Project, dated December 6, 2006 (incorporated by reference to Exhibit 10.10 to Form 8-K filed on January 4, 2013).
10.3	Product Development and Patent License Agreement, dated February 27, 2003, by and between AbbVie Biotherapeutics and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.11 to Form 8-K/A filed on January 4, 2013).
10.4	Clinical Trial Agreement, dated July 19, 2012, by and between Fred Hutchinson Cancer Center and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.12 to Form 8-K/A filed on January 4, 2013).
10.5	Clinical Trial Agreement, dated January 18, 2001, between Actinium Pharmaceuticals, Inc. and Memorial Sloan Kettering Cancer Center for the purpose of conducting a clinical trial entitled “Phase 1/2 trial of 213Bi-M195 and cytarabine for Acute Myeloid Leukemia.” (incorporated by reference to Exhibit 10.15 to Form 8-K/A filed on January 4, 2013).
10.6	Clinical Trial Agreement with The Trustees of the University of Pennsylvania, dated November 8, 2012 (incorporated by reference to Exhibit 10.16 to Form 8-K/A filed on January 4, 2013).
10.7	Clinical Trial Agreement, dated March 27, 2012, with Memorial Sloan-Kettering Cancer Center (incorporated by reference to Exhibit 10.17 to Form 8-K/A filed on January 4, 2013).
10.8	Clinical Trial Agreement, dated September 22, 2012, with Johns Hopkins University, dated September 24, 2012 (incorporated by reference to Exhibit 10.18 to Form 8-K/A filed on January 4, 2013).
10.9	License Agreement, dated June 14, 2012, for BC8 antibody with Fred Hutchinson Cancer Research Center (incorporated by reference to Exhibit 10.19 to Form 8-K/A filed on January 4, 2013).
10.10	Clinical Trial Agreement with The University of Texas M.D. Anderson Cancer, dated March 1, 2012 (incorporated by reference to Exhibit 10.23 to Form 8-K/A filed on January 4, 2013).
10.11	Amendment No. 1 to Research Agreement, dated November 7, 2012, between Actinium Pharmaceuticals, Inc. and The University of Texas M.D. Anderson Cancer (incorporated by reference to Exhibit 10.24 to Form 8-K/A filed on January 4, 2013).
10.12	Letter Agreement, dated June 19, 2011, between Actinium Pharmaceuticals, Inc. and Sloan-Kettering Institute for Cancer Research (incorporated by reference to Exhibit 10.25 to Form 8-K/A filed on January 4, 2013).
10.13	Letter Agreement, dated April 9, 2010, between Actinium Pharmaceuticals, Inc. and Sloan-Kettering Institute for Cancer Research (incorporated by reference to Exhibit 10.26 to Form 8-K/A filed on January 4, 2013).
10.14	Clinical Trial Agreement, dated April 12, 2006, with Sloan-Kettering Institute for Cancer Research and Memorial Hospital for Cancer and Allied Diseases (incorporated by reference to Exhibit 10.28 to Form 8-K /A filed on January 4, 2013).
10.15	Agreement, dated November 29, 2012, by and between Oak Ridge National Laboratory and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.30 to Form S-1/A filed on August 22, 2013).
10.16	Employment Agreement, effective September 16, 2013, by and between Actinium Pharmaceuticals, Inc. and Kaushik J. Dave (incorporated by reference to Exhibit 10.32 to Form S-1/A filed on October 28, 2013).
10.17	Actinium Pharmaceuticals, Inc. Amended and Restated 2013 Stock Plan (incorporated by reference to Exhibit 10.33 to Form S-1 filed on January 31, 2014).
10.18	Actinium Pharmaceuticals, Inc. Amended and Restated 2013 Equity Incentive Plan (incorporated by reference to Exhibit 10.34 to Form S-1 filed on January 31, 2014).
10.19	Letter Agreement, dated September 4, 2013, between Actinium Pharmaceuticals, Inc. and Sloan-Kettering Institute for Cancer Research (incorporated by reference to Exhibit 10.38 to Form S-1 filed on January 31, 2014).
10.20	

	Actinium Pharmaceuticals, Inc. Amended and Restated 2013 Stock Plan (incorporated by reference to Exhibit 10.42 to Form 10-K filed on March 16, 2015).
10.21	Consulting Agreement by and between Actinium Pharmaceuticals, Inc. and the Executive Chairman (incorporated by reference to Exhibit 10.43 to Form 10-K filed on March 16, 2015).
10.22	Actinium Pharmaceuticals, Inc. Amended and Restated 2013 Equity Incentive Plan (incorporated by reference to Exhibit 10.44 to Form 10-K filed on March 16, 2015).
10.23	Agreement, dated as of May 7, 2015, and effective April 15, 2015, by and between Actinium Pharmaceuticals, Inc. and Kaushik J. Dave (incorporated by reference to Exhibit 10.1 to Form 10-Q filed on May 8, 2015).
10.24	First Amendment to Amended and Restated 2013 Stock Plan, effective August 6, 2015 (incorporated by reference to Exhibit 10.1 to Form 10-Q filed on August 7, 2015).
10.25	First Amendment to Amended and Restated 2013 Equity Incentive Plan, effective August 6, 2015 (incorporated by reference to Exhibit 10.2 to Form 10-Q filed on August 7, 2015).
10.26	Form of indemnification Agreement (incorporated by reference to Exhibit 10.3 to Form 10-Q filed on August 7, 2015).
10.27	Amended and Restated Consulting Agreement, dated August 6, 2015, by and between Actinium Pharmaceuticals, Inc. and Sandesh Seth (incorporated by reference to Exhibit 10.4 to Form 10-Q filed on August 7, 2015).
10.28	Amended and Restated Employment Agreement, dated August 6, 2015, by and between Actinium Pharmaceuticals, Inc. and Kaushik J. Dave (incorporated by reference to Exhibit 10.5 to Form 10-Q filed on August 7, 2015).
10.29	Amendment to Employment Agreement, dated August 6, 2015, by and between Actinium Pharmaceuticals, Inc. and Dragan Cicic (incorporated by reference to Exhibit 10.6 to Form 10-Q filed on August 7, 2015).
10.30	Second Amendment to the 2013 Amended and Restated Stock Plan, effective as of December 15, 2015 (incorporated by reference to Exhibit 10.1 to Form 8-K filed on December 16, 2015).

10.31	Investor Rights Agreement, dated December 21, 2015, by and between Actinium Pharmaceuticals, Inc. and Memorial Sloan Kettering Cancer Center (incorporated by reference to Exhibit 10.1 to Form 8-K filed on December 24, 2015).
10.32	Third Amendment to the 2013 Amended and Restated Stock Plan, effective as of December 22, 2015 (incorporated by reference to Exhibit 10.56 to Form 10-K filed on March 11, 2016).
10.33	Office Space License Agreement, dated March 19, 2016, by and between Actinium Pharmaceuticals, Inc. and Relmada Therapeutics, Inc. (incorporated by reference to Exhibit 10.57 to Form 10-K filed on March 11, 2016).
10.34	Fourth Amendment to the 2013 Amended and Restated Stock Plan, effective as of December 13, 2016 (incorporated by reference to Exhibit 1.1 to Form 8-K filed on December 14, 2016).
10.35	Fifth Amendment to the 2013 Amended and Restated Stock Plan, as amended (incorporated by reference to Exhibit 10.59 to Form 10-K filed on March 16, 2017).
10.36	Amendment to Employment Agreement, dated March 16, 2017, by and between Actinium Pharmaceuticals, Inc. and Dragan Cicic. (incorporated by reference to Exhibit 10.60 to Form 10-K filed on March 16, 2017).
10.37	Amendment to Actinium Pharmaceuticals, Inc. Warrant to Purchase Common Stock, dated March 14, 2017 issued to Sandesh Seth (incorporated by reference to Exhibit 10.61 to Form 10-K filed on March 16, 2017).
10.38	Amendment to Actinium Pharmaceuticals, Inc. Warrant to Purchase Common Stock, dated March 14, 2017 issued to Amrosan LLC (incorporated by reference to Exhibit 10.62 to Form 10-K filed on March 16, 2017).
10.39	Warrant to Purchase Common Stock of Actinium Pharmaceuticals, Inc., dated March 14, 2017, issued to Sandesh Seth (incorporated by reference to Exhibit 10.63 to Form 10-K filed on March 16, 2017).
10.40	Offer Letter, dated December 27, 2016, by and between Dr. Mark S. Berger and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.64 to Form 10-K filed on March 16, 2017).
10.41	Confidential Information and Invention Assignment Agreement, dated December 27, 2016, by and between Dr. Mark S. Berger and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.65 to Form 10-K filed on March 16, 2017).
10.42	Indemnification Agreement, dated March 16, 2017, by and between Actinium Pharmaceuticals, Inc. and Mark S. Berger (incorporated by reference to Exhibit 10.66 to Form 10-K filed on March 16, 2017).
10.43	Director Agreement, dated March 28, 2017, between Ajit S. Shetty and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.1 to Form 8-K filed on March 28, 2017).
10.44	Indemnity Agreement, dated March 28, 2017, between Ajit S. Shetty and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.2 to Form 8-K filed on March 28, 2017).
10.45	Confidential Information and Invention Assignment Agreement, dated March 28, 2017, between Ajit S. Shetty and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.3 to Form 8-K filed on March 28, 2017).
10.46	Amendment to Amended and Restated Consulting Agreement, dated May 5, 2017, by and between Actinium Pharmaceuticals, Inc. and Sandesh Seth (incorporated by reference to Exhibit 10.1 to Form 8-K filed on May 11, 2017).
10.47	Offer Letter, dated September 17, 2015, between Steve O'Loughlin and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.1 to Form 10-Q filed on May 15, 2017).
10.48	Indemnification Agreement, dated May 15, 2017, between Steve O'Loughlin and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.2 to Form 10-Q filed on May 15, 2017).
10.49	Assignment and Consent Agreement, dated June 6, 2017, between 275 Madison Avenue RPW 1 LLC and 275 Madison Avenue RPW 2 LLC, Relmada Therapeutics, Inc., and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.1 to Form 10-Q filed on August 4, 2017).
10.50	Amended and Restated License Agreement, Dated June 8, 2017, between Relmada Therapeutics, Inc., and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.3 to Form 10-Q filed on August 4, 2017).
10.51	

	Offer Letter, dated May 26, 2017, between Nitya G. Ray and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.4 to Form 10-Q filed on August 4, 2017).
10.52	Agreement, dated June 6, 2017, between Sergio Traversa and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.6 to Form 10-Q filed on August 4, 2017).
10.53	Consulting Agreement, dated May 22, 2017, between Dragan Cicic and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.7 to Form 10-Q filed on August 4, 2017).
10.54	Separation and Settlement Agreement, dated May 12, 2017, between Kaushik Dave and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.8 to Form 10-Q filed on August 4, 2017).
10.55	Separation and Settlement Agreement, dated May 12, 2017, between Dragan Cicic and Actinium Pharmaceuticals, Inc. (incorporated by reference to Exhibit 10.9 to Form 10-Q filed on August 4, 2017).
10.56	Sixth Amendment to the 2013 Amended and Restated Stock Plan, as amended.
10.57	Offer Letter, effective January 2, 2018, between Dale L. Ludwig and Actinium Pharmaceuticals, Inc.
10.58	Indemnification Agreement, dated January 5, 2018, between Dale L. Ludwig and Actinium Pharmaceuticals, Inc.
10.59	Offer Letter, effective January 31, 2018, between Anil Kapur and Actinium Pharmaceuticals, Inc.
10.60	Indemnification Agreement, dated February 8, 2018, between Anil Kapur and Actinium Pharmaceuticals, Inc.

14.1	Code of Ethics (incorporated by reference to Exhibit 14.1 to Form 8-K filed on January 2, 2013).
21.1	List of Subsidiaries (incorporated by reference to Exhibit 21.1 to Form 10-K filed on March 16, 2015).
23.1	Consent of GBH CPAs, PC.
31.1	Certification of Principal Executive Officer, pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Principal Financial and Accounting Officer, pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification of Principal Executive Officer, pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification of Principal Financial and Accounting Officer, pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Schema
101.CAL	XBRL Taxonomy Calculation Linkbase
101.DEF	XBRL Taxonomy Definition Linkbase
101.LAB	XBRL Taxonomy Label Linkbase
101.PRE	XBRL Taxonomy Presentation Linkbase

* In accordance with SEC Release 33-8238, Exhibit 32.1 is being furnished and not filed.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following person on behalf of the Registrant.

Dated: March 16, 2018 **ACTINIUM PHARMACEUTICALS, INC.**

By: /s/ Sandesh Seth
Sandesh Seth
Chairman and Chief Executive Officer (Duly Authorized Officer, Principal Executive Officer)

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

Signature	**Title**	**Date**
/s/ Sandesh Seth Sandesh Seth	Chairman and Chief Executive Officer (Principal Executive Officer)	March 16, 2018
/s/ Steve O'Loughlin Steve O'Loughlin	Principal Financial Officer	March 16, 2018
/s/ David Nicholson David Nicholson	Director	March 16, 2018
/s/ Richard I. Steinhart Richard I. Steinhart	Director	March 16, 2018
/s/ Ajit J. Shetty Ajit J. Shetty	Director	March 16, 2018