

Prospectus Supplement
(To Prospectus Dated October 12, 2017)



**100,833,333 Shares Common Stock
Pre-Funded Warrants to Purchase up to 82,500,001 Shares of Common Stock**

We are offering 100,833,333 shares of our common stock, par value \$0.001 per share. Each share of common stock is being sold at a public offering price of \$0.15 per share.

We are also offering pre-funded warrants to purchase up to an aggregate of 82,500,001 shares of common stock, which we refer to herein as the pre-funded warrants, to institutional investors whose purchase of shares of common stock in this offering would otherwise result in such purchasers, together with their affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the purchasers, 9.99%) of our outstanding shares of common stock immediately following the closing of this offering. Subject to limited exceptions, a holder of pre-funded warrants will not have the right to exercise any portion of its pre-funded warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or, at the election of the holder, 9.99%) of the number of shares of common stock outstanding immediately after giving effect to such exercise. This offering also relates to the shares of common stock issuable upon exercise of any pre-funded warrants sold in this offering. Each pre-funded warrant is being sold at a public offering price of \$0.1499 per pre-funded warrant.

Each pre-funded warrant will have an exercise price per share of common stock equal to \$0.0001 and is exercisable at any time after its original issuance until exercised in full.

Our common stock is presently traded on the NYSE American under the symbol "ATNM." There is no established trading market for the pre-funded warrants, and we do not expect a market to develop. We do not intend to apply for a listing for the pre-funded warrants on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the pre-funded warrants will be limited. On April 20, 2020, the last reported sale price of our common stock was \$0.2419 per share.

Investing in the common stock and our pre-funded warrants involves risks. See "Risk Factors" beginning on page S-8 of this prospectus supplement.

	Per Share	Per Pre-Funded Warrant	Total
Public offering price	\$ 0.15	\$ 0.1499	\$ 27,491,750
Underwriting discounts and commissions⁽¹⁾	\$ (0.0105)	\$ (0.0105)	\$ (1,925,000)
Proceeds, before expenses, to Actinium Pharmaceuticals, Inc.	\$ 0.1395	\$ 0.1394	\$ 25,566,750

(1) We have agreed to reimburse the underwriters for certain expenses. See "Underwriting."

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The underwriters may also purchase up to an aggregate of 27,500,000 additional shares of our common stock at the public offering price, less the underwriting discounts and commissions, within 30 days from the date of this prospectus supplement to cover the underwriters' option to purchase additional shares. If the underwriters exercise the option in full, the total underwriting discounts and commissions will be \$2,213,750 and the total net proceeds, before expenses, to us will be \$29,403,000.

Delivery of the shares of common stock will be made through the book-entry facilities of The Depository Trust Company. Delivery of the pre-funded warrants will be made by physical delivery. We anticipate that delivery of the shares of common stock and pre-funded warrants will be made on or about April 24, 2020, subject to customary closing conditions.

Sole Book-Running Manager

H.C. Wainwright & Co.

Co-Managers

Maxim Group LLC

JonesTrading

The date of this prospectus supplement is April 21, 2020

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus form a part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission utilizing a “shelf” registration process. This document is in two parts. The first part is the prospectus supplement, which describes the specific terms of this offering. The second part, the accompanying prospectus, provides more general information about the securities we may offer from time to time, some of which may not apply to the securities offered by this prospectus supplement. Generally, when we refer to this prospectus, we are referring to both parts of this document combined. Before you invest, you should carefully read this prospectus supplement, the accompanying prospectus, all information incorporated by reference herein and therein, and the additional information described under “Where You Can Find More Information” in this prospectus supplement. These documents contain information you should consider when making your investment decision. This prospectus supplement may add, update or change information contained in the accompanying prospectus. To the extent that any statement that we make in this prospectus supplement is inconsistent with statements made in the accompanying prospectus or any documents incorporated by reference therein, the statements made in this prospectus supplement will be deemed to modify or supersede those made in the accompanying prospectus and such documents incorporated by reference therein.

Neither we nor the underwriters have authorized any other person to provide you with any information that is different. We are offering to sell, and seeking offers to buy, our securities only in jurisdictions where offers and sales are permitted. The distribution of this prospectus supplement and the accompanying prospectus and the offering of the securities in certain jurisdictions may be restricted by law. Persons outside the United States who come into possession of this prospectus supplement and/or the accompanying prospectus must inform themselves about, and observe any restrictions relating to, the offering of the securities and the distribution of this prospectus supplement and/or the accompanying prospectus outside the United States. This prospectus supplement and the accompanying prospectus do not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus supplement and the accompanying prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference in the accompanying prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

Unless the context otherwise requires, references in this prospectus supplement to “we”, “us” and “our” refer to Actinium Pharmaceuticals, Inc.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights selected information about our company, this offering and information appearing elsewhere in this prospectus supplement, in the accompanying prospectus, in the documents we incorporate by reference and in any free writing prospectus that we have authorized for use in connection with this offering. This summary is not complete and does not contain all the information that you should consider before investing in our securities. You should read this entire prospectus supplement and the accompanying prospectus carefully, including the “Risk Factors” contained in this prospectus supplement, the accompanying prospectus and the financial statements and the notes thereto incorporated by reference in this prospectus supplement and the accompanying prospectus and any free writing prospectus that we have authorized for use in connection with this offering, before making an investment decision. This prospectus supplement may add to, update or change information in the accompanying prospectus.

BUSINESS OVERVIEW

Actinium Pharmaceuticals Inc. is a clinical-stage, biopharmaceutical company applying its proprietary platform technology and deep understanding of radiobiology to the development and advancement of novel targeted therapies known as ARCs or Antibody Radiation-Conjugates. Radiation is an effective therapeutic modality that is used in the treatment of over fifty percent of all cancer patients and often combined with chemotherapy and lately immunotherapy for greater therapeutic effect. Radiation is typically administered from outside the body which constrains the amount that can be administered to patients due to dose limiting toxicities. In addition, due to the diffuse nature of the external radiation beam, its usage is limited to solid tumors and cannot be used in blood cancers which are diffuse. ARCs combine the cell-killing ability of a radioisotope payload with a targeting agent such as a monoclonal antibody, or mAb, to deliver radiation inside the body to specific cells, to potentially generate greater efficacy and less toxicity. ARCs usage is broader than external delivered radiation as they can be used for both solid tumors and blood cancers. Blood or hematologic cancers are highly sensitive to radiation and Actinium’s clinical pipeline is focused on ARCs targeting the antigens CD45 and CD33, both of which are expressed in multiple hematologic cancers. Our clinical programs are focused on two primary areas: targeted conditioning prior to a cell or gene therapy procedure and therapeutics, either in combination with other agents or as a monotherapy. Actinium’s product development strategy is actively informed by clinical data with our ARCs in over 500 patients including the ongoing SIERRA trial. Our clinical pipeline has emanated from our AWE, or Antibody Warhead Enabling technology platform which is protected by over 110 issued and pending patents, trade secrets and know-how.

Targeted Conditioning

Actinium is advancing the only multi-target, multi-indication clinical-stage pipeline for targeted conditioning and the only ARC-based targeted conditioning regimens in development. Actinium’s ARCs for targeted conditioning are intended to potentially enable improved access to cell-based therapies with curative potential including BMT or bone marrow transplant, ACT or adoptive cell therapy such as CAR-T and Gene Therapy, as well as improved outcomes. Conditioning in the context of BMT, ACT or Gene Therapy is the act of depleting certain blood and immune forming cells including bone marrow stem cells and, in some cases, diseased cells prior to transplanting new cells into a patient. Currently, conditioning is accomplished using a combination of chemotherapeutic agents and external radiation. These non-targeted conditioning regimens may prevent a patient from receiving a potentially curative therapy and hinder outcomes due to their toxicities. ARCs have the potential to increase patient access and outcomes by way of their ability to selectively deplete targeted cells while sparing normal healthy cells. We use our ARCs at high isotope dose levels to achieve myeloablation, which fully depletes bone marrow stem cells and at lower isotope dose levels to achieve lymphodepletion, which spares bone marrow stem cells from depletion. In addition, dosing may be titrated downward from myeloablative doses to achieve partial myeloablation which may be appropriate for certain gene therapy programs.

CD45 Targeted Conditioning Program

Our CD45 ARC is comprised of the anti-CD45 monoclonal antibody known as apamistamab (formerly BC8) and the radioisotope I-131 or Iodine-131. CD45 is an antigen expressed on leukemia, lymphoma and myeloma cancer cells, as well as nucleated immune cells but is not expressed outside of the hematopoietic, or blood, system. This unique expression on blood cancer and immune cells enables simultaneous depletion of both cell types making CD45 an optimal antigen for targeted conditioning applications. CD45 is a cell surface antigen with an average expression of 200,000 copies per cell, however, it only internalizes at a rate of 10-15%. We believe our ARC approach is the most effective method to target CD45 positive cells, as the radioisotope payload linear energy transfer can readily ablate a targeted cell without requiring payload internalization like an antibody drug conjugate or rely on biological effector function processes like a naked antibody. Furthermore, since CD45 expression level varies from low to high antigen density as the immune cells become more terminally differentiated, we can selectively condition depending on the therapeutic application, from full myeloablation to transient lymphodepletion, by adjusting the dose or intensity of the I-131 isotope payload. Full myeloablation can be achieved with high doses of I-131, as its energy pathlength and crossfire effect can penetrate into bone marrow niches to target and deplete blood and immune system forming bone marrow stem cells. Myeloablation is applicable to autologous or allogeneic BMT and to autologous gene edited or modified therapies that can reconstitute a patient’s blood and immune systems. Alternatively, low doses of I-131 can be transiently lymphodepleting and spare a patient’s bone marrow stem cells, which we believe is ideal for ACT applications such as CAR-T. We intend to develop our CD45 targeted conditioning program for BMT, ACT and Gene Therapy applications for malignant and non-malignant diseases.

Our lead CD45 targeted conditioning product candidate is Iomab-B, which uses high doses of I-131 to achieve myeloablative conditioning prior to a BMT. Iomab-B is currently being studied in the pivotal Phase 3 Study of Iomab-B in Elderly Relapsed or Refractory AML, or SIERRA, clinical trial for targeted conditioning prior to an allogeneic BMT for patients with active, relapsed or refractory (r/r) Acute Myeloid Leukemia, or AML, who are age 55 or older. Patients with active, r/r AML are not normally considered eligible for BMT and the SIERRA trial is the only randomized Phase 3 trial to offer BMT as a treatment option for this patient population. The SIERRA trial compares outcomes of patients randomized to receive Iomab-B and a BMT (the study arm) to those patients randomized to receive physician's choice of salvage chemotherapy (the control arm). Salvage chemotherapy is also defined as conventional care, as no standard of care exists for this patient population. Patients who fail to achieve a CR or Complete Response on the control arm are ineligible to proceed to a BMT, but the trial design permits these patients to "cross over" to receive the study arm treatment if they meet the eligibility criteria. The primary endpoint of the SIERRA trial is durable Complete Remission, or dCR, of six months and the secondary endpoint is one-year Overall Survival, or OS. When the crossover patients receive Iomab-B and BMT, they have not achieved remission with their salvage therapy and are considered to be failures for the primary endpoint of the study. The SIERRA trial is currently active at 20 sites in the United States and Canada, which includes many of the leading BMT sites based on volume. We expect to complete enrollment of the SIERRA trial and have topline data that we believe will support the submission of a Biologics License Application, or BLA, with the FDA in 2021. If approved, our initial commercial launch would target the leading 50-100 BMT and medical centers that perform the vast majority of BMT's in the US today.

Safety and feasibility data from the first 75 patients enrolled on the SIERRA trial, which represents 50% of the total of 150 patients to be enrolled in the trial, was presented in an oral presentation at the Transplantation & Cellular Therapy Meetings of ASTCT and CIBMTR in February 2020. It was reported that 100% of patients (31/31) on the study arm that received a therapeutic dose of Iomab-B received a BMT, with a median time to BMT of 30 days, and all patients achieved neutrophil and platelet engraftment in a median time of 20 days despite a high median blast count of 30%. On the control arm, only 18% of patients (7/38) achieved remission after salvage therapy, and then received a BMT with a median time to BMT of 67 days and median blast count of 26%. Of the 82% of patients failing to achieve a CR with conventional care (31/38), 20 patients were eligible to cross over to the study arm. These patients are considered as having failed the primary endpoint of the study. All crossover patients who received the therapeutic dose of Iomab-B (20/20) received a BMT, with a median time to BMT of 64 days and all patients achieved engraftment in a median time of 19 days despite high median blast count of 35% at time of crossover. It was also reported that 100-day non-relapse transplant-related mortality (100-day TRM) of the study or Iomab-B arm was 6% (2/31) of patients that received a BMT compared to 29% of patients (2/7) who received a BMT after salvage therapy on the control arm. The universal engraftment rate and low 100-day TRM rate of the Iomab-B arm resulted in 29 patients potentially evaluable for the primary endpoint compared to 5 patients in the control arm, a nearly six times difference.

The SIERRA trial is powered for up to two interim analyses of the primary endpoint exercisable at Actinium's discretion and triggered by an enrollment range of 70 up to 110 patients. The primary endpoint of SIERRA is durable Complete Remission (dCR) of 180 days. Actinium intends to exercise an ad-hoc analysis based on the data reported from SIERRA thus far and the current status of enrollment, which could generate topline data for the primary endpoint in late 2020 and early termination of the trial if positive. Based on the statistical plan of the study, a single ad hoc analysis would result in a minimal alpha spend of no more than 0.00925, depending on the number of patients included in the ad hoc analysis.

Our Iomab-ACT program is intended for targeted conditioning prior to ACT or Gene Therapy and uses the same¹³¹I-apamistamab ARC construct as Iomab-B at varying doses. At lower doses it is applicable for lymphodepletion prior to CAR-T or certain Gene Therapy applications where stem cell myeloablation is not necessary. At higher doses it is applicable for Gene Therapy applications where stem cell myeloablation is necessary.

We announced a collaboration with University of California Davis to utilize Iomab-ACT conditioning in an ongoing Phase 1/2 trial with a novel anti-HIV autologous stem cell gene therapy for patients with HIV-related lymphoma. This is the first Gene Therapy trial to use an ARC-based conditioning regimen. ¹³¹I-Apamistamab has clinical proof of concept as a targeted conditioning regimen for patients with high-risk, relapsed or refractory lymphoma prior to an autologous stem cell transplant from a previous study, where a favorable safety profile with no dose-limiting toxicities and minimal non-hematologic toxicities were observed and promising efficacy with median overall survival not reached (range: 29 months to infinity) and 31% of patients in prolonged remission at a median of 36 months follow up (range: 25 – 41 months). In this study, Iomab-ACT is intended to replace the chemotherapy-based condition regimen known as BEAM (BCNU/carmustine, etoposide, cytarabine, and melphalan) to simultaneously kill the patient's lymphoma cells and deplete the patient's stem cells to make room for the transplant. Upon engraftment, the transplanted gene modified autologous stem cells containing three anti-HIV genes are intended to leave the patient with a new immune system that is resistant to the HIV virus. Iomab-ACT will be substituted for BEAM in the ongoing Phase 1/2 trial that we expect to have clinical proof of concept data from in 2021.

We believe our Iomab-ACT program is highly differentiated when compared to Fludarabine and Cyclophosphamide or Flu/Cy or other chemotherapy-based regimens that are used as the standard of practice today for lymphodepletion prior to CAR-T. CD45 is an antigen expressed on certain immune cell types that are relevant to the mechanism of CAR-T therapies including lymphocytes, regulatory T cells and macrophages that have been associated with clinical responses that may limit the safety and efficacy of these CAR-T therapies including Cytokine Release Syndrome, or CRS, and neurotoxicity, as well as durability of response. Some of these limitations may be attributable to the chemotherapy-based conditioning agents that are being used currently prior to CAR-T therapies. Preclinical data supporting the rationale for our Iomab-ACT program was presented at multiple medical conferences in 2019. Unlike chemotherapy, preclinical data suggests Iomab-ACT is targeted in nature and, due to this targeted effect, we expect we can improve CAR-T cell expansion more efficiently, potentially resulting in responses that are more durable but also result in reduced CAR-T related toxicities. Importantly, we expect the Iomab-ACT program construct to enable lymphodepletion through a single-dose, outpatient administration versus Flu/Cy or other chemotherapy-based lymphodepletion regimens that can require multiple infusion cycles over several days. Because of this potentially superior profile, the Iomab-ACT construct could result in improved access to CAR-T therapy and better outcomes. We intend to begin a clinical trial with ¹³¹I-apamistamab as a targeted conditioning agent prior to CAR-T subject to identifying a suitable partner and we expect to have Phase 1 clinical proof of concept data in 2021.

CD33 Program: Targeted Conditioning, Combinations and Therapeutics

Our CD33 program is evaluating the clinical utility of an ARC comprised of the anti-CD33 mAb lintuzumab linked to the potent alpha-emitting radioisotope Actinium-225 or Ac-225. CD33 is expressed in the majority of patients with AML and myelodysplastic syndrome, or MDS, as well as approximately one third of patients with multiple myeloma. Our CD33 development program is driven by data obtained from over one hundred treated patients, including results from a Phase 1/2 trial that was conducted in 58 patients with newly diagnosed AML, which was completed in 2018. This clinical data, as well as our current and prior experience with Iomab-B, is shaping a two-pronged approach with our CD33 program, where at high doses we are using it for targeted conditioning and at low doses we are using it for therapeutic purposes in combination with other modalities, or as a single agent.

Actimab-MDS is our second clinical trial focused on targeted conditioning, in this case for patients with high-risk MDS and is our second pivotal program. Actimab-MDS is informed by prior experience with our CD33 ARC in multiple trials for patients with AML, MDS and for patients that have progressed from MDS to AML, which is also known as secondary AML. Data from these trials showed that our CD33 ARC had single-agent activity capable of producing complete remissions (CRs) in certain patients at varying dose levels with minimal non-hematologic extramedullary toxicities. However, dose-dependent myelosuppression, a class effect of CD33 directed therapies, was seen in many of these patients. Given that myelosuppression is necessary prior to a BMT and, that a BMT can rescue patients with myelosuppression, we decided to pursue a trial in targeted conditioning in high-risk MDS patients with this ARC in combination with Reduced Intensity Conditioning, or RIC, regimens. RIC regimens are comprised of low doses of chemotherapies such as fludarabine, cytarabine, busulfan or melphalan. A BMT is the only curative treatment option for these patients with high-risk MDS who have poor, or very poor cytogenetics. However, these patients have poor outcomes due to high relapse rates following a BMT. Based on our interactions with FDA to date, we will conduct a Phase 1 dose-finding clinical trial that will be followed by a randomized trial that, depending on the results observed, may potentially serve as a pivotal trial to support the submission of a BLA. We are currently finalizing the protocol for the Phase 1 trial with the FDA, as well as the pathway to a pivotal trial. Subject to feedback from the FDA, we expect to initiate the Phase 1 portion (expected enrollment 7-18 patients) of this pivotal program in the second half of 2020 and advance to the randomized registration trial in 2021.

Our CD33 development program is also studying the construct at various dose levels and dosing regimens either in combination or alone in multiple hematologic disease indications. We currently have multiple clinical trials ongoing, in startup phase and in planning, to study our CD33 ARC in combination with other therapeutic modalities such as chemotherapy, targeted agents or immunotherapy. We believe that radiation can be synergistic when used in combination with these modalities based on mechanistic rationale supported by our own clinical data, preclinical research and scientific evidence in the literature. We are also studying our CD33 ARC as a monotherapy in the case of MM. Our CD33 ARC development program encompasses the following ongoing and planned trials:

Combination Trials:

- Phase 1 investigator initiated Actimab-A + CLAG-M combination trial with the salvage chemotherapy regimen CLAG-M (cladribine, cytarabine, filgrastim and mitoxantrone) for patients with relapsed or refractory AML at the Medical College of Wisconsin. At the 2019 American Society of Hematology Annual Meeting, it was reported that 86% of patients (6/7) receiving 0.50 μ Ci/kg of Actimab-A, and CLAG-M achieved a complete remission after receiving Actimab-A + CLAG-M, which is nearly 60% greater than the 55% remission rate observed in a study of CLAG-M alone conducted at MCW in the same r/r AML patient population. In addition, 71% of these patients (5/7) achieved negative minimal residual disease status, indicating that these are deep remissions. The 0.50 μ Ci/kg dose of Actimab-A was shown to be subtherapeutic as a single agent. Since the combination to date has been well tolerated, the study progressed to the third and final cohort that will study Actimab-A at a dose of 0.75 μ Ci/kg in March 2020 and we expect to complete this trial by the end of 2020. Upon completion, we intend to explore a regulatory pathway for a pivotal trial that could potentially support a registration. The combination of Actimab-A + CLAG-M is supported by mechanistic rationale for combining inhibitors of DNA replication and/or repair processes such as mitoxantrone, a topoisomerase-II inhibitor, and radiation, as imparted by tumor targeting of Ac-225 with Actimab-A. The Actimab-A + CLAG-M combination study has provided proof of principle that the addition of subtherapeutic doses of Actimab-A to other AML therapies can lead to well tolerated regimens with improved responses.

Phase 1 Actimab-A + Ven combination trial with the BCL-2 inhibitor Venetoclax (Ven) for patients with relapsed or refractory AML. This trial will be led by UCLA Medical Center and will be conducted at three additional trial sites. This combination is supported by mechanistic evidence in preclinical studies using Ven-resistant AML tumor cell lines. In these models, we have demonstrated that Actimab-A can deplete Mcl-1 and Bcl-XL, two proteins implicated in mediating resistance to venetoclax, in addition to causing potentially lethal double-stranded DNA breaks in these CD33 targeted cells. Furthermore, in vivo studies in animal models of Ven-resistant AML demonstrated robust tumor regression and improved survival in cohorts receiving the Actimab-A Ven combination compared to Ven alone. The rationale for this clinical study is that the addition of Actimab-A will; 1) have a direct anti-tumor effect via double-stranded DNA breaks and 2) deplete Mcl-1 and BCL-XL making the AML cells more susceptible to Ven. We expect to initiate the trial and have preliminary proof of concept clinical data from this combination study by the end of 2020.

- Phase 1 Actimab-A + 7+3 combination trial in patients with newly diagnosed AML with intermediate or high-risk cytogenetics or molecular markers. In February 2020, we announced plans to initiate this combination trial to add Actimab-A to 7+3, which is the standard of care chemotherapy regimen comprised of cytarabine and daunorubicin for patients with newly diagnosed AML who are fit for intensive therapy. As we have seen with the combination of Actimab-A + CLAG-M chemotherapy, we believe that Actimab-A will have synergistic and potentiating properties when added to 7+3, which causes DNA damage and has radiation sensitizing properties since daunorubicin is an anthracycline antibiotic that cytotoxicity inhibits DNA replication and repair and RNA synthesis through inhibition of topoisomerase II. The rationale for studying Actimab-A in combination with 7+3 is the potential for both additive and synergistic effects due to the interplay of various mechanisms including DNA damage from alpha radiation and the chemotherapy combination, radiation sensitization, and prevention of DNA damage repair. We expect to initiate this Phase 1 trial by the end of 2020 and have proof of concept data in 2021.

Monotherapy Trial:

- Multi-center Phase 1 Actimab-M trial for patients with penta refractory MM. Approximately one third of patients with MM have CD33 expression, which is associated with poorer outcomes. MM is exquisitely sensitive to radiation, but patients do not receive radiation currently because external delivery could result in significant toxicities given that the disease is spread throughout the body. The rationale for this trial is to use a new therapeutic modality of alpha radiation, which MM cells have no known resistance mechanism against, for this high-risk patient population. We have recently initiated Memorial Sloan Kettering Cancer Center as a clinical trial site in the Actimab-M trial, which is currently active at three other trial sites in the United States. We expect to have initial proof of concept data from this trial in 2021.

Antibody Warhead Enabling Technology Platform

Our proprietary Antibody Warhead Enabling, or AWE, Technology Platform is supported by intellectual property, know-how and trade secrets that cover the generation, development, methods of use and manufacture of ARCs and certain of their components. Our AWE technology patent portfolio includes 28 patent families comprised of over 110 issued and pending patent applications, of which 9 are issued and 23 pending in the United States, and 81 are issued and pending internationally the useful life of which ranges from 2019 to 2039. Our proprietary technology enables the direct labeling, or conjugation and labeling, of a biomolecular targeting agent to a radionuclide warhead and its development and use as a therapeutic regimen for the treatment of diseases such as cancer. Our intellectual property covers ARC compositions of matter, formulations, methods of administration, and radionuclide production. Further, our AWE intellectual property covers various methods of use for ARCs in multiple diseases, including indication, dose and scheduling, radionuclide warhead, and therapeutic combinations. In addition, due to the renewed focus on research and technology development in 2017 and 2018, we expect the useful life of new intellectual property filed by us, if granted, to extend well beyond the current dates in several key areas including for next generation ARCs, combination treatments and targeted radiation approaches using the isotopes Ac-225 and I-131.

Our proprietary technology includes methods of conjugation, labeling and use of the radionuclides Ac-225 and I-131. Our technology covers the use of the “gold standard” chelator, tetracarboxylic acid, an organic compound used to attach, or conjugate, the radionuclide Ac-225 to monoclonal antibodies and any conceivable derivative thereof. Additionally, we possess intellectual property protection, know-how and trade secrets covering efficient methods of chelation and labeling of the targeting agent with Ac-225 as well as newer next-generation methods of chelation or labeling. We are conducting preclinical research with our AWE Technology Platform to demonstrate proof of concept in liquid and solid tumors for various indications including targeted conditioning, lymphodepletion, combinations of ARCs with other modalities and as monotherapies to enable research collaborations, partnerships and expand our development pipeline. In March 2018, we entered into a collaborative research agreement with Astellas Pharma, Inc., or Astellas, that is utilizing our AWE technology platform to create ARCs using the Ac-225 isotope and select targeting agents owned by Astellas.

Recent Developments

In April 2020, we provided an update on the pivotal Phase 3 SIERRA trial announcing that we intend to exercise one of the two designed ad-hoc analyses, which could generate topline data for the primary endpoint in late 2020 and early termination of the trial if positive. Our decision to exercise the ad-hoc analysis is based on the data reported from SIERRA thus far and the fact that enrollment is approaching the upper bound of the range in which we can exercise the analysis. At full enrollment of 150 patients, SIERRA will be deemed successful if the efficacy of Iomab-B arm, measured by dCR rate, is at least twice that of the control arm. Based on the statistical plan of the study, a single ad hoc analysis would result in a minimal alpha spend of no more than 0.00925, depending on the number of patients included in the ad hoc analysis. In addition, based on feedback from investigators, we updated that a majority of the 20 SIERRA trial sites, including top enrolling sites, are continuing to recruit and enroll patients with March having higher than average enrollment despite COVID-19. Actinium anticipates that sites currently not actively enrolling due to COVID-19 will likely resume recruitment and enrollment in the summer timeframe.

In February 2020, we announced the expansion of our CD33 program with a combination trial of Actimab-A with the standard of care 7+3 chemotherapy regimen in patients with newly diagnosed AML who have intermediate or high-risk cytogenetics of molecular markers. This Phase 1 trial will be led by Columbia University Herbert Irving Comprehensive Cancer Center.

In January 2020, we announced a clinical collaboration with UC Davis to use our Iomab-ACT program (apamistamab-I-131) as a targeted conditioning agent with an autologous anti-HIV stem gene therapy that is being studied in an ongoing Phase 1/2 trial.

In December 2019, interim results were presented in a poster presentation at the American Society of Hematology Annual Meeting from our ongoing Phase 1 trial of Actimab-A in combination with the chemotherapy regimen CLAG-M in patients with relapsed or refractory AML. It was reported that 86% of patients (6/7) receiving 0.50 μ Ci/kg of Actimab-A, a dose that was shown to be subtherapeutic as a single agent, and CLAG-M achieved a complete remission after receiving Actimab-A + CLAG-M, which is nearly 60% greater than the 54% remission rate observed in a study of CLAG-M alone. In addition, 71% of patients (5/7) achieved negative minimal residual disease status, indicating that deep remissions were attained. Actinium intends to conduct larger and more complex randomized trials to confirm the significance of these preliminary results.

Since January 2020, we sold 9.5 million shares of common stock through our At-the-Market facility for gross proceeds of \$2.6 million and sold 0.8 million shares of common stock under a purchase agreement with Lincoln Park Capital Fund, LLC for gross proceeds of \$0.2 million.

As of December 31, 2019, the balance of our cash and cash equivalents was \$9.3 million.

Corporate and Other Information

We were organized in the State of Nevada in October 1997 and reorganized in the State of Delaware in March 2013. Our principal executive offices are located at 275 Madison Avenue, 7th Floor, New York, New York 10016. Our telephone number is (646) 677-3870. Our website address is www.actiniumpharma.com. Information accessed through our website is not incorporated into this prospectus supplement and is not a part of this prospectus supplement or the accompanying prospectus.

THE OFFERING

Issuer	Actinium Pharmaceuticals, Inc.
Common Stock Offered by Us	100,833,333 shares of common stock.
Pre-funded warrants offered by us	Pre-funded warrants to purchase up to an aggregate of 82,500,001 shares of common stock. We are offering the pre-funded warrants to institutional investors whose purchase of shares of common stock in this offering would otherwise result in such purchasers, together with their affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the purchasers, 9.99%) of our outstanding shares of common stock immediately following the closing of this offering. Each pre-funded warrant is exercisable for one share of common stock. Each pre-funded warrant is being sold at a public offering price of \$0.1499. Each pre-funded warrant will have an exercise price per share of common stock of \$0.0001, and will be immediately exercisable and may be exercised at any time until exercised in full. This prospectus supplement also relates to the offering of the shares of common stock issuable upon exercise of the pre-funded warrants. The exercise price and number of shares of common stock issuable upon exercise will be subject to certain further adjustments as described herein.
Common Stock to be Outstanding Immediately After this Offering	358,343,700 shares (or 385,843,700 shares if the underwriters exercise their option to purchase additional shares in full), in each case assuming all of the pre-funded warrants issued in this offering are exercised.
Option to purchase additional shares	We have granted the underwriters an option to purchase up to 27,500,000 additional shares of common stock from us at the public offering price per share, less underwriting discounts and commissions. This option is exercisable, in whole or in part, for a period of 30 days from the date of this prospectus supplement.

Use of Proceeds

We estimate that our net proceeds from our issuance and sale of shares of our common stock and pre-funded warrants to purchase shares of common stock in this offering will be approximately \$25.3 million, after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters exercise their option to purchase additional shares of common stock in full, we estimate the net proceeds from this offering will be approximately \$29.1 million from the sale of our securities, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We currently intend to use the net proceeds from the sale of securities offered by this prospectus supplement to complete our ongoing pivotal, Phase 3 SIERRA trial for our lead product candidate Iomab-B and progress Phase 1 trials from our refocused CD33 program to the proof of concept stage. We will also use the net proceeds to support our AWE Technology Platform including our Iomab-ACT program, research and development and general working capital needs. See the section entitled "Use of Proceeds" below.

Risk Factors

Investing in our common shares involves a high degree of risk. For a discussion of factors that you should consider before buying our securities, see the information under "Risk Factors" in this prospectus supplement and under similar headings in the documents incorporated by reference into this prospectus supplement.

NYSE American symbol

"ATNM."

The number of shares of our common stock that will be outstanding immediately after the offering is based on 175,010,366 shares outstanding as of April 20, 2020. Unless we specifically state otherwise, the share information in this prospectus supplement excludes:

- 11,037,571 shares of common stock issuable upon the exercise of stock options outstanding as of April 20, 2020 under our equity incentive plans, with a weighted average exercise price of \$1.19 per share;
- 22,149,819 shares of common stock available for future grants under our equity incentive plans as of April 20, 2020; and
- 86,140,575 shares of common stock issuable upon the exercise of warrants outstanding as of April 20, 2020, with a weighted average exercise price of \$0.69 per share.

Unless otherwise indicated, this prospectus supplement reflects and assumes no exercise by the underwriters of their option to purchase additional shares.

RISK FACTORS

An investment in our securities involves a high degree of risk. Prior to making a decision about investing in our securities, you should carefully consider the specific factors discussed below, together with all of the other information contained or incorporated by reference in this prospectus supplement and the accompanying prospectus, including in our Annual Report on Form 10-K and any updates described in our Quarterly Reports on Form 10-Q or other documents filed by us with the SEC. It is not possible to predict or identify all such risks. Consequently, we could also be affected by additional factors that are not presently known to us or that we currently consider to be immaterial to our operations.

Risks Related to Our Business

Recurring losses and negative cash flows from operations raise substantial doubt about our ability to continue as a going concern and we may not be able to continue as a going concern.

Our recurring losses from operations and negative cash flows from operations raise substantial doubt about our ability to continue as a going concern. Substantial doubt about our ability to continue as a going concern may create negative reactions to the price of the common shares of our stock and we may have a more difficult time obtaining financing.

We have prepared our financial statements on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities and commitments in the normal course of business. The financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or amounts of liabilities that might be necessary should we be unable to continue in existence.

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 September 30, 2019, and December 31, 2018, we had an accumulated deficit of \$204.2 million and \$186.9 million, respectively. We reported a net loss of \$17.3 million for the nine months ended September 30, 2019 and 2018. 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 2021 and any partnering revenues that it may generate may not be sufficient to fund our ongoing operations. Any partnering revenues generated by licensing activities may not be sufficient to fund ongoing operations. Further, our other product candidates are not expected to be approved for several years and may not generate sufficient revenues from our licensing and commercialization efforts to fund operations.

Presently, with no further source of capital either via a financing or a collaboration, we project that we may run out of funds in 2020. We currently do not have any additional source of capital secured. If we are unable to raise additional funds, we could be required to reduce our spending plans, reduce our workforce, license one or more of our products or technologies that we would otherwise seek to commercialize ourselves, sell all or some of our assets, cease operations or even declare bankruptcy. We will require additional cash in order to maximize the commercial opportunity and continue clinical development of our product candidates. Alternatives available to us to sustain our operations include collaborative agreements, equity financing, debt and other financing arrangements with potential corporate partners and other sources. However, there can be no assurance that any such collaborative agreements or other sources of funding will be available to us on favorable terms, if at all.

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 or indeed on any terms. In addition, from time to time, we may not be able to secure enough capital in a timely enough manner which may cause the generation of a going-concern opinion from our auditors which can and may impair our stock market valuation and also our ability to finance on favorable terms or indeed on any 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.

We are highly dependent on the success of Iomab-B and the SIERRA trial and we may not be able to complete the necessary clinical development or our development efforts may not result in the data necessary to receive regulatory approval

Iomab-B, which we licensed from the Fred Hutchinson Cancer Research Center, in June 2012 is our lead program to which we allocate a significant portion of our resources. We are currently enrolling patients in the pivotal Phase 3 SIERRA trial (Study of Iomab-B in Elderly Relapsed or Refractory AML), a 150-patient multi-center randomized trial that will compare outcomes of patients who receive Iomab-B and a BMT to those patients receiving physician's choice of salvage chemotherapy, defined as conventional care, as no standard of care exists for this patient population. The SIERRA trial may be unsuccessful and fail to demonstrate a safety and efficacy profile that is necessary to receive favorable regulatory approval. The trial's DMC or Data Monitoring Committee may recommend that the trial be stopped early for safety or efficacy concerns, which could prevent us from completing the SIERRA trial. Even if Iomab-B receives favorable regulatory approval, we may not be successful in securing adequate reimbursement or establishing successful commercial operations. Any or all of these factors could have a material adverse impact on our business and ability to continue operations.

We may be unable to establish sales, marketing and commercial supply capabilities

We do not currently have, nor have we ever had, commercial sales and marketing capabilities. If any of our product candidates become approved, we would have to build and establish these capabilities in order to commercialize our approved product candidates. The process of establishing commercial capabilities will be expensive and time consuming. Even if we are successful in building sales and marketing capabilities, we may not be successful in commercializing any of our product candidates. Any delays in commercialization or failure to successfully commercialize any product candidate may have material adverse impacts on our business and ability to continue operations.

Our business could be adversely affected by the effects of health epidemics, including the global COVID-19 pandemic.

In December 2019, a novel strain of COVID-19 was reported in China. Since then, COVID-19 has spread globally, to include Canada, the United States and several European countries. The spread of COVID-19 from China to other countries has resulted in the World Health Organization (WHO) declaring the outbreak of COVID-19 as a “pandemic,” or a worldwide spread of a new disease, on March 11, 2020. Many countries around the world have imposed quarantines and restrictions on travel and mass gatherings to slow the spread of the virus and have closed non-essential businesses.

As local jurisdictions continue to put restrictions in place, our ability to continue to operate our business may also be limited. Such events may result in a period of business, supply and drug product manufacturing disruption, and in reduced operations, any of which could materially affect our business, financial condition and results of operations. In response to COVID-19, we implemented remote working and thus far have not experienced a significant disruption or delay in our operations.

The spread of COVID-19, which has caused a broad impact globally, may materially affect us economically. While the potential economic impact brought by, and the duration of, COVID-19 may be difficult to assess or predict, a widespread pandemic could result in significant disruption of global financial markets, reducing our ability to access capital, which could in the future negatively affect our liquidity. In addition, a recession or market correction resulting from the spread of COVID-19 could materially affect our business and the value of our common shares.

Currently, the pivotal Phase 3 SIERRA trial for our lead program, Iomab-B, continues to remain active at a majority of our clinical trial sites, with investigators providing feedback that recruitment and enrollment will remain active because of the acute nature of the disease, the high unmet needs of patients with relapsed or refractory AML, the potentially curative nature of BMT and the differentiated profile of Iomab-B. We currently anticipate that sites currently not actively enrolling due to COVID-19 will likely resume recruitment and enrollment in the summer timeframe. We also believe our earlier stage clinical trials for our CD33 program will also continue to recruit and enroll patients given the acute nature of relapsed or refractory AML. The continued spread of COVID-19 globally could adversely affect our planned clinical trial operations, including our ability to initiate the trials on the expected timelines and recruit and retain patients and principal investigators and site staff who, as healthcare providers, may have heightened exposure to COVID-19 if an outbreak occurs in their geography. Further, the COVID-19 outbreak could result in delays in our clinical trials due to prioritization of hospital resources toward the outbreak, restrictions in travel, potential unwillingness of patients to enroll in trials at this time, or the inability of patients to comply with clinical trial protocols if quarantines or travel restrictions impede patient movement or interrupt healthcare services. In addition, we rely on independent clinical investigators, contract research organizations and other third-party service providers to assist us in managing, monitoring and otherwise carrying out our preclinical studies and clinical trials, and the outbreak may affect their ability to devote sufficient time and resources to our programs or to travel to sites to perform work for us.

Additionally, COVID-19 may also result in delays in receiving approvals from local and foreign regulatory authorities, delays in necessary interactions with IRB’s or Institutional Review Boards, local and foreign regulators, ethics committees and other important agencies and contractors due to limitations in employee resources or forced furlough of government employees.

The global outbreak of COVID-19 continues to rapidly evolve. The ultimate long-term impact of COVID-19 is highly uncertain and cannot be predicted with confidence. In addition, since COVID-19 has become a pandemic, it could materially affect our operations globally, including at our headquarters in the New York City area and at current and future clinical trial sites, manufacturing sites and suppliers.

Our business could be adversely affected by health epidemics in regions where our supply and manufacturing, clinical trial sites, other vendors or other business operations are located.

The ultimate impact of the COVID-19 outbreak or a similar health epidemic is highly uncertain and subject to change. We do not yet know the full extent of potential delays or impacts on our business, our supply chain, clinical trials, healthcare systems or the global economy as a whole. However, these effects could have a material impact on our operations, and, therefore, we will continue to monitor the COVID-19 situation closely and implement risk mitigation as needed.

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 an antibody radiation-conjugate 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 antibody radiation-conjugate 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 than 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 two product candidates in clinical development. In December 2015, the FDA cleared our IND filing for Iomab-B, and we are currently enrolling patients in a 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 multiple clinical trials ongoing for our drug candidates under our own sponsorship and multiple investigator-initiated trials ongoing.

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 300 patients in need of a BMT. Iomab-B is our product candidate that links I-131 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 are also evaluating a lower dose of the BC8 antibody and I-131 for lymphodepletion prior to CAR-T or adoptive cell therapy. We are currently evaluating clinical trials that would use our construct for lymphodepletion. Our lintuzumab-Ac-225 product candidate is also being studied in several Phase 1 trials under our sponsorship and investigator-initiated trials in patients with AML, myelodysplastic syndrome and multiple myeloma. Product candidates utilizing the lintuzumab 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 Ac-225 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 regulatory pathway for our Actimab-MDS trial that consists of a dose-confirming Phase 1 trial that can be followed by a randomized, controlled pivotal trial that could support a BLA filing. 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, lintuzumab-Ac-225, 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

We have dedicated research and development activities towards improving Iomab-B's stability to enhance commercial usefulness of the product and now have a proprietary formulation for which IP is pending. We have and may continue to file patents related to Iomab-B that can provide barriers to entry but there is no certainty that these patents will be granted or such granting thereof will adequately prevent others from seeking to replicate and use the BC8 antibody or the construct. We have pending patents related to radioimmunoconjugate composition, formulation administration, and methods of use in solid or liquid cancers. This matter includes composition, administration, and methods of treatment for our products Iomab-B and Actimab-A. 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.

For our CD33 program, lintuzumab-Ac225, we have pursued a broad strategy of key patent filings and anticipated regulatory protections in the US and abroad to protect this asset and its use. Our final drug construct consists of the lintuzumab antibody labeled with the alpha radioisotope Ac225. We have licensed issued patents that relate to the linker technology we use to conjugate the isotope to the antibody. We also own issued and pending patents related to Ac225 isotope production methods and drug preparation methods. Furthermore, we have pending patent applications covering methods of use in the treatment of disease, including therapeutic combinations, and for targeted conditioning in preparation for cell therapy such as bone marrow transplant, which may provide protection to 2039. This approach, we believe, provides important intellectual property protection given that key patents related to the humanized antibody, lintuzumab, which we use in our CD33 program product candidates have expired. While it is possible that others may eventually use an antibody with the same sequence, we believe that our pending patent portfolio will provide protection within critical areas of clinical focus. In addition, we possess trade secrets and know-how related to the manufacturing and use of antibody radio-conjugates including lintuzumab-Ac225. Any potentially competing product based on the lintuzumab antibody is also likely to require several years of development before achieving our product candidate's current status and may be subject to significant regulatory hurdles. Nevertheless, the development of such a molecule remains a possibility and 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 it would be 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 is comprised of several clinical trials including several investigator-initiated trials including AML, MDS and Multiple Myeloma that are studying the same drug construct consisting of lintuzumab-Ac-225. Negative results from any of these trials could negatively impact our ability to enroll or complete our other trials studying lintuzumab-Ac-225. Additionally, negative outcomes including safety concerns, may result in the FDA discontinuing other trials utilizing lintuzumab-Ac-225.

We may be unable to obtain a sufficient supply of isotopes to support clinical development or at commercial scale.

Iodine-131 is a key component of our Iomab-B drug candidate. We currently source medical grade I-131 from three suppliers including two leading global manufacturers. Currently, there is sufficient supply of I-131 to advance our ongoing SIERRA clinical trial, support additional trials we may undertake utilizing I-131 and for commercialization of Iomab-B. We continually evaluate I-131 manufacturers and suppliers and intend to have multiple qualified suppliers prior to the commercial launch of Iomab-B. While we consider I-131 to be commoditized and obtainable through several suppliers, there can be no guarantee that we will be able to secure I-131 or obtain I-131 on terms that are acceptable to us.

Actinium-225 is a key component of our CD33 ARC program, AWE platform and other drug candidates that we might consider for development with the Ac-225 payload. There are adequate quantities of Ac-225 available today to meet our current needs via our present supplier, the Department of Energy, or DOE. The current Ac-225 currently supplied to Actinium’s clinical trials from the DOE is derived from the natural decay of thorium-229 from so-called ‘thorium-cows’ and is able to produce sufficient quantities that are several multiples of the amount of Ac-225 we require to supply our clinical programs through to early commercialization phase. The DOE is also producing Ac-225 from a recently developed alternative route for Ac-225 production via a linear accelerator that is currently being evaluated by Actinium. Initial preclinical and modelling results have indicated that the linear accelerator sourced Ac-225 does not impact labelling efficiency and expected distribution. Per representations made by the Department of Energy, the capacity of Ac-225 from this route is expected to be sufficient to supply all of Actinium’s pipeline and commercial Ac-225 needs and support new program expansion by not just Actinium but also other companies that are developing Ac-225 based products. Additional routes of Ac-225 production are being pursued by the DOE including the generation of new thorium cows and production via a cyclotron. The cyclotron production method for Ac-225 production leverages Actinium’s proprietary technology and know-how and presents an additional path towards production of high-quality Ac-225 that would be able to satisfy commercial needs. In addition, we are aware of at least six other government and non-government entities globally including the U.S., Canada, Russia, Belgium, France and Japan that have, or expect to have ability to supply Ac-225 or equipment for its production within the timeframes relevant to first commercial approval of our Ac-225 ARC.

Our contract for supply of this isotope from the DOE must be renewed yearly, and the current contract extends through the end of 2020. 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 the DOE will renew the contract or that change its policies that allow for the sale of isotope to us. Failure to acquire sufficient quantities of medical grade Ac-225 would make it impossible to effectively complete clinical trials and to commercialize any Ac-225 based drug candidates that we may develop and would materially harm our business.

Our ability to conduct clinical trials to advance our ARC drug candidates is dependent on our ability to obtain the radioisotopes I-131, Ac-225 and other isotopes we may choose to utilize in the future. Currently, we are dependent on third party manufacturers and suppliers for our isotopes. These suppliers may not perform their contracted services or may breach or terminate their agreements with us. Our suppliers are subject to regulations and standards that are overseen by regulatory and government agencies and we have no control over our suppliers' compliance to these standards. Failure to comply with regulations and standards may result in their inability to supply isotope could result in delays in our clinical trials, which could have a negative impact on our business. We have developed intellectual property, know-how and trade secrets related to the manufacturing process of Ac-225. While we have manufactured medical grade Ac-225 of a purity compared to the cyclotron sourced material in the past, this activity was terminated due to operating cost reasons and we currently do not have experience in manufacturing medical grade Ac-225 and may not obtain the resources necessary to establish our own manufacturing capabilities in future. Our inability to build out and establish our own manufacturing facilities would require us to continue to rely on third party suppliers as we currently do. However, based on our current third-party suppliers and potential future suppliers of Ac-225 we expect to have adequate isotope supply to support our current ongoing clinical trials, current AWE program activities and commercialization should our drug candidates receive approval.

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, refractory patients, which several of our trials are enrolling, participating in 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.

The antibodies we use in our antibody radiation-conjugate product candidates may be subject to generic competition.

We are not aware of any existing or pending regulations or legislation that pertains to generic radiopharmaceutical products such as our antibody radiation-conjugate product candidates. 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. Even if a biosimilar gets approved for one of the antibodies that we use, the final constructs of our drug candidates consist of an antibody, radioisotope and in some cases a linker. Therefore, we do not believe that the final drug product of our candidates can be subject to competition from a biosimilar as outlined in BPCIA.

Our product candidates may never achieve market acceptance.

Iomab-B, CD33 ARC 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 ARC 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 the components of our drug product candidates including monoclonal antibodies, linkers and radioisotopes, as well as the final construct which comprises our drug product candidates. We expect to continue to depend on third-party manufacturers for the foreseeable future. Any performance failure on the part of our existing or future manufacturers could delay clinical development, cause us to suspend or terminate development or delay or prohibit regulatory approval of our product candidates or commercialization of any approved products. Further avenues of disruption to our clinical or eventual commercial supply may also occur due to the sale, acquisition, business reprioritization, bankruptcy or other unforeseen circumstances that might occur at any of our suppliers or contract manufacturing partners including an inability to come to terms on renewal of existing contracts or new contracts. With a view to maintaining business continuity we are evaluating alternatives and second and even third sources of supply or manufacturing for our core suppliers and manufacturing partners, however there can be no assurances that we will be able to identify such suppliers or partners and assuming we did, that we would be able to enter into contracts that are on favorable terms or on terms that will enable sufficient supply to ensure business continuity and support our growth plans.

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.

We depend on vendors with specialized operations, equipment and know-how to manufacture the respective components of our drug candidates. We have entered into manufacturing and supply agreements with these third-parties and in some instances, we have agreed that they be the exclusive manufacturer and supplier. If any of the third-parties we depend on encounter difficulties in their operations, fail to comply with required regulations or breach their contractual obligations it may be difficult, or we may be unable to identify suitable alternative third-party manufacturers. While we identify and evaluate third-party manufacturers from time to time, even if we do identify suitable alternative third-parties, we may fail to reach agreement on contractual terms, it may be prohibitively expensive and there can be no assurance that we can successfully complete technology transfer and development work necessary or complete the necessary work in a timely manner. Any of which could prevent us from commencing manufacturing with third-parties, which could cause delays or suspension of our clinical trials and pre-clinical work that may have a negative impact on our business.

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 develop or 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 averse 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 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 Ac-225, 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 is considered a Penny Stock.

During the first nine months of 2019, and for the years of 2018, 2017 and 2016, the price of our common stock has traded below \$5.00 per share, and therefore is 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.

We may be required to effectuate a reverse stock split to be able to maintain compliance with applicable listing requirements or standards of the NYSE AMERICAN exchange or our common stock could get delisted.

If our stock trades at a depressed valuation for an extended period of time, we may be required to effectuate a reverse stock split to maintain compliance with NYSE American listing requirements, or we could be delisted from the exchange. In addition, we may elect to seek approval for and if authorized, effectuate a reverse stock split to increase the price of our common stock so that our stock is no longer considered a penny stock and to make our stock more marketable to institutional investors that cannot buy stocks below certain prices.

In order to effectuate a reverse split, we would be required to obtain shareholder approval at a meeting of shareholders. We would also need the approval of the Financial Regulatory Authority (FINRA) to effectuate a stock split. There is no guarantee that we would be successful in obtaining the necessary approval from FINRA or the votes required to reach a quorum to hold a meeting or to authorize our Board of Directors to approve a reverse stock split. To conduct a meeting of shareholders we would have to file and issue the required proxy information and materials, which could take a significant amount of time. It is possible that during the proxy solicitation process our stock would be delisted before we could obtain the necessary authorization for our Board of Directors to approve a reverse split to regain compliance with NYSE AMERICAN listing requirement.

If we fail to maintain compliance with NYSE American listing requirements and our stock is delisted, the market price and liquidity of our common stock could be adversely impacted. This may also reduce our ability to raise additional capital. Even if we are successful in obtaining authorization and our Board of Directors approves a reverse stock split, there can be no assurance that institutional investors will buy shares of our common stock. There can be no assurance that our common stock can maintain its post-reverse split price and it may be treated as a penny stock. In the event, that our common stock is delisted from the NYSE AMERICAN or another national securities exchange, trading of our common stock could occur in the over-the-counter market or on an electronic bulletin board established for unlisted securities such as the OTC Bulletin Board or Pink Sheets. This could result in adverse impact on the market price and liquidity of our common stock, a reduction in coverage by security analysts and impair our ability to raise additional capital, all of which could cause the price of our common stock to decline.

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.

Our ability to utilize our net operating loss carryforwards and certain other tax attributes may be limited.

Our ability to utilize our federal net operating loss and tax credit carryforwards may be limited under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code. The limitations apply if we experience an "ownership change", generally defined as a greater than 50 percentage point change in the ownership of our equity by certain stockholders over a rolling three-year period. Similar provisions of state tax law may also apply. We have not assessed whether such an ownership change has previously occurred. If we have experienced an ownership change at any time since our formation, we may already be subject to limitations on our ability to utilize our existing net operating losses and other tax attributes to offset taxable income. In addition, future changes in our stock ownership, which may be outside of our control, may trigger an ownership change and, consequently, the limitations under Sections 382 and 383 of the Code. As a result, if or when we earn net taxable income, our ability to use our pre-change net operating loss carryforwards and other tax attributes to offset such taxable income may be subject to limitations, which could adversely affect our future cash flows.

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, 2018 and 2017 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.

Additional Risks Relating to this Offering

Our management team may invest or spend the proceeds of this offering in ways with which you may not agree or in ways which may not yield a significant return.

Our management will have broad discretion over the use of proceeds from this offering. We currently intend to use the net proceeds from the sale of securities offered by this prospectus to fund our ongoing pivotal, Phase 3 SIERRA trial for our lead product candidate Iomab-B and progress Phase 1 trials from our refocused CD33 program to the proof of concept stage. We will also use the proceeds to support our AWE Technology Platform including our Iomab-ACT program, research and development and general working capital needs. However, our management will have broad discretion in the application of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our common stock. The failure by management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline and delay the development of our product candidates.

Purchasers in this offering will likely experience immediate and substantial dilution in the book value of their investment.

Because the effective public offering price per share is substantially higher than the net tangible book value per share of our common stock, you will suffer substantial dilution in the net tangible book value of the common stock you purchase in this offering. After giving effect to the sale by us of 100,833,333 shares of our common stock and our pre-funded warrants to purchase 82,500,001 shares of common stock at an effective public offering price of \$0.15 per share of common stock, and after deducting the underwriting discounts and commissions and estimated offering expenses payable by us, you will suffer immediate and substantial dilution of \$0.0523 per share in the net tangible book value of the common stock you purchase in this offering. See “Dilution” on page S-31 for a more detailed discussion of the dilution you will incur in connection with this offering. To the extent outstanding stock options or warrants are exercised, there may be further dilution to new investors. In addition, to the extent we need to raise additional capital in the future, and we issue additional equity or convertible debt securities, our then existing stockholders may experience further dilution.

There is no established public trading market for the pre-funded warrants being offered in this offering.

There is no established public trading market for the pre-funded warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply to list the pre-funded warrants on any national securities exchange or other nationally recognized trading system, including the NYSE American. Without an active market, the liquidity of the pre-funded warrants will be limited.

Sales of a substantial number of shares of our common stock, or the perception that such sales may occur, may adversely impact the price of our common stock.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception that such sales may occur, may adversely impact the price of our common stock, even if there is no relationship between such sales and the performance of our business.

As of April 14, 2020, we had 174,839,536 shares of common stock outstanding, as well as outstanding options to purchase an aggregate of 11,037,551 shares of our common stock at a weighted average exercise price of \$1.19 per share and outstanding warrants to purchase an aggregate of 86,140,575 shares of our common stock at a weighted average exercise price of \$0.69 per share. The exercise of such outstanding options and warrants may result in further dilution of your investment.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement and accompanying prospectus and the information incorporated by reference in this prospectus supplement and accompanying prospectus contain “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), which include information relating to future events, future financial performance, strategies, expectations, competitive environment and regulation. Words such as “may,” “should,” “could,” “would,” “predicts,” “potential,” “continue,” “expects,” “anticipates,” “future,” “intends,” “plans,” “believes,” “estimates,” and similar expressions, as well as statements in future tense, identify forward-looking statements. Forward-looking statements should not be read as a guarantee of future performance or results and will probably not be accurate indications of when such performance or results will be achieved. Forward-looking statements are based on information we have when those statements are made or our management’s good faith belief as of that time with respect to future events, and are subject to risks and uncertainties that could cause actual performance or results to differ materially from those expressed in or suggested by the forward-looking statements. Important factors that could cause such differences include, but are not limited to:

- our history of recurring losses and negative cash flows from operating activities, significant future commitments and the uncertainty regarding the adequacy of our liquidity to pursue our complete business objectives;
- our ability to complete clinical trials as anticipated and obtain and maintain regulatory approvals for our products;
- our ability to adequately protect our intellectual property;
- disputes over ownership of intellectual property;
- our dependence on a single manufacturing facility and our ability to comply with stringent manufacturing quality standards and to increase production as necessary;
- the risk that the data collected from our current and planned clinical trials may not be sufficient to demonstrate that our products are an attractive alternative to other procedures and products;
- intense competition in our industry, with competitors having substantially greater financial, technological, research and development, regulatory and clinical, manufacturing, marketing and sales, distribution and personnel resources than we do;
- entry of new competitors and products and potential technological obsolescence of our products;
- loss of a key customer or supplier;
- adverse economic conditions;
- adverse federal, state and local government regulation, in the United States;
- price increases for supplies and components;
- inability to carry out research, development and commercialization plans; and
- loss or retirement of key executives and research scientists.

Although we believe that the forward-looking statements contained herein are reasonable, we can give no assurance that our expectations will be met. All forward-looking statements contained herein are expressly qualified in their entirety by this cautionary statement and the risk factors beginning on page S-8 of this prospectus supplement.

You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this prospectus supplement. Except to the extent required by applicable laws and regulations, we undertake no obligation to update these forward-looking statements to reflect events or circumstances after the date of this prospectus or to reflect the occurrence of unanticipated events.

USE OF PROCEEDS

We estimate the net proceeds from this offering will be approximately \$25.3 million.

If the underwriters exercise their option to purchase additional securities in full, we estimate the net proceeds from this offering will be approximately \$29.1 million, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We currently intend to use the net proceeds from the sale of securities offered by this prospectus to fund our ongoing pivotal, Phase 3 SIERRA trial for our lead product candidate Iomab-B, advance our Iomab-ACT program for targeted conditioning to proof of concept and progress Phase 1 trials from our refocused CD33 program to the proof of concept stage. We will also use the proceeds to support our AWE Technology Platform including, research and development and general working capital needs.

Investors are cautioned, however, that expenditures may vary substantially from these uses. Investors will be relying on the judgment of our management, who will have broad discretion regarding the application of the proceeds of this offering. The amounts and timing of our actual expenditures will depend upon numerous factors, including the amount of cash generated by our operations, the amount of competition and other operational factors. We may find it necessary or advisable to use portions of the proceeds from this offering for other purposes.

From time to time, we evaluate these and other factors and we anticipate continuing to make such evaluations to determine if the existing allocation of resources, including the proceeds of this offering, is being optimized. Circumstances that may give rise to a change in the use of proceeds include:

- a change in development plan or strategy;
- the addition of new products or applications;
- technical delays;
- delays or difficulties with our clinical trials;
- negative results from our clinical trials;
- difficulty obtaining U.S. Food and Drug Administration approval;
- failure to achieve sales as anticipated; and
- the availability of other sources of cash including cash flow from operations and new bank debt financing arrangements, if any.

Pending other uses, we intend to invest the proceeds to us in investment-grade, interest-bearing securities such as money market funds, certificates of deposit or direct or guaranteed obligations of the U.S. government, or hold as cash. We cannot predict whether the proceeds invested will yield a favorable, or any, return.

DILUTION

If you purchase shares of our common stock (and/or pre-funded warrants) in this offering, you will experience dilution to the extent of the difference between the effective public offering price per share of common stock in this offering and our as adjusted net tangible book value per share immediately after this offering. Net tangible book value is total assets minus the sum of liabilities and intangible assets. Net tangible book value per share is net tangible book value divided by the total number of shares of common stock outstanding. As of September 30, 2019, our net tangible book value was \$8.7 million, or approximately \$0.053 per share. Dilution with respect to net tangible book value per share represents the difference between the amount per share or pre-funded warrant paid by purchasers in this offering and the net tangible book value per share of our common stock immediately after this offering.

After giving effect to the sale of 100,833,333 shares of our common stock in this offering at a public offering price of \$0.15 per share and pre-funded warrants to purchase 82,500,001 shares of common stock in this offering at a public offering price of \$0.1499 per pre-funded warrant, and after deducting estimated underwriting fees and estimated offering expenses payable by us, assuming the exercise of all pre-funded warrants at the exercise price of \$0.0001 per share of common stock, our as-adjusted net tangible book value as of September 30, 2019 would have been approximately \$34.0 million, or \$0.0977 per share. This represents an immediate increase in net tangible book value of \$0.0447 per share to existing stockholders and immediate dilution of \$0.0523 per share to purchasers purchasing our securities in this offering at the public offering price.

The following table illustrates the dilution in net tangible book value per share to new investors:

Effective public offering price per share:		\$	0.15
Net tangible book value per share as of September 30, 2019		\$	0.0530
Increase in net tangible book value per share after this offering		\$	0.0447
As adjusted net tangible book value per share after this offering		\$	0.0977
Dilution per share to new investors		\$	0.0523

If the underwriters exercise their option to purchase additional shares of common stock in full, our as adjusted net tangible book value will increase to approximately \$ 0.1008 per share, representing an increase in net tangible book value of \$0.0478 per share, and an immediate dilution of approximately \$0.0492 per share to new investors.

The foregoing discussion and table do not take into account further dilution to new investors that could occur upon the exercise of outstanding options or warrants having a per share exercise price less than the public offering price in this offering. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the issuance of those securities could result in further dilution to our stockholders.

The above discussion and table are based on 164,701,167 shares outstanding as of September 30, 2019 and excludes:

- 11,931,801 shares of common stock issuable upon the exercise of stock options outstanding as of September 30, 2019 under our equity incentive plans, with a weighted average exercise price of \$1.14 per share;
- 11,255,569 shares of common stock available for future grants under our equity incentive plans as of September 30, 2019; and
- 86,335,713 shares of common stock issuable upon the exercise of warrants outstanding as of September 30, 2019, with a weighted average exercise price of \$0.69 per share.

DESCRIPTION OF SECURITIES WE ARE OFFERING

Common stock

The material terms and provisions of our common stock are described under the caption “Description of Capital Stock” in the accompanying prospectus beginning on page 11. As of April 20, 2020, we had 175,010,366 shares of our common stock outstanding. Our common stock is listed on the NYSE American under the symbol “ATNM”.

Pre-Funded Warrants

The following is a summary of the material terms and provisions of the pre-funded warrants that are being offered hereby. This summary is subject to and qualified in its entirety by the form of pre-funded warrants, which has been provided to the investors in this offering and which will be filed with the SEC as an exhibit to a Current Report on Form 8-K in connection with this offering and incorporated by reference into the registration statement of which this prospectus supplement forms a part. Prospective investors should carefully review the terms and provisions of the form of pre-funded warrant for a complete description of the terms and conditions of the pre-funded warrants.

Duration and Exercise Price

The pre-funded warrants offered hereby will have an exercise price of \$0.0001 per share. The pre-funded warrants will be immediately exercisable and may be exercised at any time after their original issuance until such pre-funded warrants are exercised in full. The exercise price and number of shares of common stock issuable upon exercise are subject to appropriate adjustment in the event of share dividends, share splits, reorganizations or similar events affecting our shares of common stock. Pre-funded warrants will be issued in certificated form only.

Exercisability

The pre-funded warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of such holder’s warrants to the extent that the holder would own more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding shares of common stock immediately after exercise, except that upon at least 61 days’ prior notice from the holder to us, the holder may increase the amount of ownership of outstanding shares of common stock after exercising the holder’s pre-funded warrants up to 9.99% of the number of shares of common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the pre-funded warrants. Purchasers in this offering may also elect prior to the issuance of pre-funded warrants to have the initial exercise limitation set at 9.99% of our outstanding shares of common stock.

Cashless Exercise

If, at the time a holder exercises its pre-funded warrants, a registration statement registering the issuance of the shares of common stock underlying the pre-funded warrants under the Securities Act of 1933, as amended, or the Securities Act, is not then effective or available for the issuance of such shares, then in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the pre-funded warrant.

Fundamental Transactions

In the event of any fundamental transaction, as described in the pre-funded warrants and generally including any merger with or into another entity, sale of all or substantially all of our assets, tender offer or exchange offer, or reclassification of our shares of common stock, then upon any subsequent exercise of a pre-funded warrant, the holder will have the right to receive as alternative consideration, for each share of common stock that would have been issuable upon such exercise immediately prior to the occurrence of such fundamental transaction, the number of shares of common stock of the successor or acquiring corporation or of our company, if it is the surviving corporation, and any additional consideration receivable upon or as a result of such transaction by a holder of the number of shares of common stock for which the pre-funded warrant is exercisable immediately prior to such event.

Transferability

In accordance with its terms and subject to applicable laws, a pre-funded warrant may be transferred at the option of the holder upon surrender of the pre-funded warrant to us together with the appropriate instruments of transfer and payment of funds sufficient to pay any transfer taxes (if applicable).

Fractional Shares

No fractional shares of common stock will be issued upon the exercise of the pre-funded warrants. Rather, the number of shares of common stock to be issued will, at our election, either be rounded up to the nearest whole number or we will pay a cash adjustment in respect of such final fraction in an amount equal to such fraction multiplied by the exercise price.

Trading Market

There is no established trading market for the pre-funded warrants, and we do not expect a market to develop. We do not intend to apply for a listing for the pre-funded warrants on any securities exchange or other nationally recognized trading system. Without an active trading market, the liquidity of the pre-funded warrants will be limited.

Rights as a Shareholder

Except as otherwise provided in the pre-funded warrants or by virtue of the holders' ownership of shares of common stock, the holders of pre-funded warrants do not have the rights or privileges of holders of our shares of common stock, including any voting rights, until such pre-funded warrant holders exercise their warrants.

UNDERWRITING

H.C. Wainwright & Co., LLC is acting as representative of the underwriters named below. Subject to the terms and conditions set forth in an underwriting agreement among us and the underwriters, we have agreed to sell to the underwriters, and each of the underwriters has agreed, severally and not jointly, to purchase from us, the number of shares of our common stock and pre-funded warrants set forth opposite its name below.

Underwriter	Number of Shares	Number of Pre-Funded Warrants
H.C. Wainwright & Co., LLC	77,916,667	82,500,001
Maxim Group LLC	13,750,000	-
JonesTrading Institutional Services LLC	9,166,666	-
Total	100,833,333	82,500,001

The underwriting agreement provides that the obligation of the underwriters to purchase the shares of common stock and pre-funded warrants offered by this prospectus supplement is subject to certain conditions. The underwriters are obligated to purchase all of the shares of common stock and pre-funded warrants offered hereby if any of the securities are purchased, other than those shares covered by the option to purchase additional shares described below.

We have agreed to indemnify the several underwriters against certain liabilities, including liabilities under the Securities Act relating to losses or claims resulting from material misstatements in or omissions from this prospectus supplement, the registration statement of which this prospectus supplement is a part, certain free writing prospectuses that may be used in the offering and in any marketing materials used in connection with this offering and to contribute to payments the underwriters may be required to make in respect of those liabilities.

Discounts, Commissions and Expenses

The underwriters propose to offer the shares of common stock and pre-funded warrants pursuant to the underwriting agreement to the public at the applicable public offering price set forth on the cover page of this prospectus supplement and to certain dealers at that price less a concession not in excess of \$0.00675 per share based on the public offering price per share or pre-funded warrant set forth on the cover page of this prospectus supplement. After this offering, the public offering price and concession may be changed by the underwriters. No such change shall change the amount of proceeds to be received by us as set forth on the cover page of this prospectus supplement.

The following table shows underwriting discounts and commissions payable to the underwriters by us in connection with this offering:

	Per Share	Per Pre-Funded Warrant	Total without Option	Total with Option
Public offering price	\$ 0.15	0.1499	\$ 27,491,750	\$ 31,616,750
Underwriting discounts and commissions paid by us	\$ (0.0105)	(0.0105)	\$ (1,925,000)	\$ (2,213,750)
Net proceeds, before expenses, to us	\$ 0.1395	0.1394	\$ 25,566,750	\$ 29,403,000

The underwriting agreement provides that the obligations of the several underwriters to pay for and accept delivery of the shares of common stock (and/or pre-funded warrants) offered by this prospectus supplement are subject to the approval of certain legal matters by their counsel and to certain other conditions. The underwriters are obligated to take and pay for all of the shares of common (and/or pre-funded warrants) offered by this prospectus supplement if any such securities are taken. If an underwriter defaults, the underwriting agreement provides that the purchase commitments of the non-defaulting underwriters may be increased. The underwriters reserve the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

The estimated offering expenses payable by us, exclusive of the underwriting discounts and commissions, are approximately \$0.3 million, which includes legal, accounting and printing costs and various other fees associated with the registration and listing of our common stock, as well as reimbursement we have agreed to provide to the representative for certain expenses they incurred in connection with this offering consisting of (a) up to \$100,000 for fees and expenses of legal counsel and other out-of-pocket expenses, (b) \$25,000 for non-accountable expenses and (c) \$12,900 for clearing expenses.

Option to Purchase Additional Securities

We have granted the underwriters an option to purchase additional securities. This option, which is exercisable for up to 30 days after the date of this prospectus supplement, permits the underwriters to purchase up to 27,500,000 shares of common stock at a public offering price of \$0.15 per share, less underwriting discounts and commissions. If any shares are purchased with this option to purchase additional shares, the underwriters will purchase shares in approximately the same proportion as shown in the table above. If any additional shares of common stock are purchased, the underwriters will offer the additional shares on the same terms as those on which the shares are being offered.

No Sales of Similar Securities

We have agreed with the underwriters, subject to specified exceptions and until the date that is 90 days after the date of this prospectus supplement not to (i) offer, sell, contract to sell, pledge, grant any option to purchase, make any short sale or otherwise transfer or dispose of, directly or indirectly, or file with the SEC a registration statement under the Securities Act relating to, any shares of our common stock or any securities that are substantially similar to our common stock, including but not limited to any options or warrants to purchase shares of our common stock or any securities that are convertible into or exchangeable for, or that represent the right to receive, common stock or any such substantially similar securities, or publicly disclose the intention to make any offer, sale, pledge, disposition or filing or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of our common stock, or any such other securities, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of our common stock or such other securities, in cash or otherwise, without the prior written consent of the representative.

Our directors and executive officers have agreed with the underwriters, subject to specified exceptions, not to (i) offer, pledge, announce the intention to sell, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, make any short sale or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into, exercisable or exchangeable for or that represent the right to receive our common stock (including without limitation, our common stock which may be deemed to be beneficially owned in accordance with the rules and regulations of the SEC and securities which may be issued upon exercise of a stock option or warrant), whether now owned or hereafter acquired, or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of our common stock, whether any such transaction is to be settled by delivery of our common stock or such other securities, in cash or otherwise. These restrictions will apply through and including the date that is 90 days after the date of this prospectus supplement.

We have also agreed to a restriction on the issuance of any variable priced securities for 12 months following the closing of this offering, except that we may use our existing at-the-market offering facility and/or may enter into new at-the-market offering facilities through a registered broker-dealer following the 90-day anniversary of the closing date of the offering.

Listing

Our common stock is listed on the NYSE American under the symbol "ATNM."

Price Stabilization, Short Positions and Penalty Bids

The underwriters may engage in syndicate covering transactions, stabilizing transactions and penalty bids or purchases for the purpose of pegging, fixing or maintaining the price of our shares of common stock:

- Syndicate covering transactions involve purchases of securities in the open market after the distribution has been completed in order to cover syndicate short positions. Such a naked short position would be closed out by buying securities in the open market. A naked short position is more likely to be created if the underwriters are concerned that there could be downward pressure on the price of the securities in the open market after pricing that could adversely affect investors who purchase in the offering.
- Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specific maximum.
- Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a stabilizing or syndicate covering transaction to cover syndicate short positions.

These syndicate covering transactions, stabilizing transactions and penalty bids may have the effect of raising or maintaining the market prices of our securities or preventing or retarding a decline in the market prices of our securities. As a result, the price of our shares of common stock may be higher than the price that might otherwise exist in the open market. Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of our shares of common stock. These transactions may be effected on the NYSE American, in the over-the-counter market or on any other trading market and, if commenced, may be discontinued at any time.

Neither we nor the underwriters make any representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the prices of our securities. In addition, neither we nor the underwriters make any representation that the underwriters will engage in these transactions or that any transactions, once commenced, will not be discontinued without notice.

Electronic Offer, Sale and Distribution of Securities

A prospectus in electronic format may be made available on the websites maintained by the underwriters, if any, participating in this offering and the underwriters may distribute prospectuses electronically. Other than the prospectus in electronic format, the information on these websites is not part of this prospectus supplement or the registration statement of which this prospectus supplement forms a part, has not been approved or endorsed by us or the underwriters, and should not be relied upon by investors.

Other Relationships

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing and brokerage activities. Certain of the underwriters and their affiliates may engage in from time to time in the future certain investment banking and other commercial dealings in the ordinary course of business with us or our affiliates, for which they have received and may continue to receive customary fees and commissions.

In the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers, and such investment and securities activities may involve securities and/or instruments of the issuer. The underwriters and their respective affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Selling Restrictions

Canada

Resale Restrictions

The distribution of shares of our common stock in Canada is being made only in the provinces of Ontario, Quebec, Alberta and British Columbia on a private placement basis exempt from the requirement that we prepare and file a prospectus with the securities regulatory authorities in each province where trades of these securities are made. Any resale of shares of our common stock in Canada must be made under applicable securities laws which may vary depending on the relevant jurisdiction, and which may require resales to be made under available statutory exemptions or under a discretionary exemption granted by the applicable Canadian securities regulatory authority. Purchasers are advised to seek legal advice prior to any resale of the securities.

Representations of Canadian Purchasers

By purchasing shares of our common stock in Canada and accepting delivery of a purchase confirmation, a purchaser is representing to us and the dealer from whom the purchase confirmation is received that:

- the purchaser is entitled under applicable provincial securities laws to purchase the shares of common stock without the benefit of a prospectus qualified under those securities laws as it is an “accredited investor” as defined under National Instrument 45-106—Prospectus Exemptions,
- the purchaser is a “permitted client” as defined in National Instrument 31-103—Registration Requirements, Exemptions and Ongoing Registrant Obligations,
- where required by law, the purchaser is purchasing as principal and not as agent, and
- the purchaser has reviewed the text above under Resale Restrictions.

Conflicts of Interest

Canadian purchasers are hereby notified that the underwriters are relying on the exemption set out in section 3A.3 or 3A.4, if applicable, of National Instrument 33-105 — *Underwriting Conflicts* from having to provide certain conflict of interest disclosure in this document.

Statutory Rights of Action

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if the offering memorandum (including any amendment thereto) such as this document contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser of these securities in Canada should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Enforcement of Legal Rights

All of our directors and officers as well as the experts named herein may be located outside of Canada and, as a result, it may not be possible for Canadian purchasers to effect service of process within Canada upon us or those persons. All or a substantial portion of our assets and the assets of those persons may be located outside of Canada and, as a result, it may not be possible to satisfy a judgment against us or those persons in Canada or to enforce a judgment obtained in Canadian courts against us or those persons outside of Canada.

Taxation and Eligibility for Investment

Canadian purchasers of shares of our common stock should consult their own legal and tax advisors with respect to the tax consequences of an investment in the shares of common stock in their particular circumstances and about the eligibility of shares of our common stock for investment by the purchaser under relevant Canadian legislation.

European Economic Area

In relation to each Member State of the European Economic Area that has implemented the Prospectus Directive, each referred to as a Relevant Member State, an offer to the public of any shares of our common stock may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any shares of our common stock may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- (a) to any legal entity which is a “qualified investor” as defined in the Prospectus Directive;
- (b) to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), subject to obtaining the prior consent of the underwriters for any such offer; or
- (c) in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer of shares of our common stock shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an “offer to the public” in relation to any shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares of our common stock to be offered so as to enable an investor to decide to purchase any shares of our common stock, as the same may be varied in that Relevant Member State by any measure implementing the Prospectus Directive in that Relevant Member State and the expression “Prospectus Directive” means Directive 2003/71/EC (and amendments thereto, including by Directive 2010/73/EU) and includes any relevant implementing measure in each Relevant Member State.

United Kingdom

Each underwriter has represented and agreed that:

- (a) it has not made or will not make an offer of shares of our common stock to the public in the United Kingdom within the meaning of section 102B of the Financial Services and Markets Act 2000 (as amended) (FSMA) except to legal entities which are authorized or regulated to operate in the financial markets or, if not so authorized or regulated, whose corporate purpose is solely to invest in securities or otherwise in circumstances which do not require the publication by us of a prospectus pursuant to the Prospectus Rules of the Financial Services Authority;
- (b) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of section 21 of FSMA) to persons who have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 or in circumstances in which section 21 of FSMA does not apply to us; and
- (c) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the securities in, from or otherwise involving the United Kingdom.

Hong Kong

No securities have been offered or sold, and no securities may be offered or sold, in Hong Kong, by means of any document, other than to persons whose ordinary business is to buy or sell shares or debentures, whether as principal or agent; or to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or in other circumstances which do not result in the document being a “prospectus” as defined in the Companies Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of the Companies Ordinance (Cap. 32) of Hong Kong. No document, invitation or advertisement relating to the securities has been issued or may be issued or may be in the possession of any person for the purpose of issue (in each case whether in Hong Kong or elsewhere), which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted under the securities laws of Hong Kong) other than with respect to securities which are or are intended to be disposed of only to persons outside Hong Kong or only to “professional investors” as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance.

This prospectus has not been registered with the Registrar of Companies in Hong Kong. Accordingly, this prospectus may not be issued, circulated or distributed in Hong Kong, and the securities may not be offered for subscription to members of the public in Hong Kong. Each person acquiring the securities will be required, and is deemed by the acquisition of the securities, to confirm that he is aware of the restriction on offers of the securities described in this prospectus and the relevant offering documents and that he is not acquiring, and has not been offered any securities in circumstances that contravene any such restrictions.

Singapore

This prospectus has not been, and will not be, registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares of common stock may not be circulated or distributed, nor may the shares of common stock be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (i) to an institutional investor (as defined in Section 4A of the Securities and Futures Act, Chapter 289 of Singapore (the “SFA”)) pursuant to Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to compliance with conditions set forth in the SFA.

Where the common stock is subscribed or purchased under Section 275 of the SFA by a relevant person which is:

- (a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or
- (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities (as defined in Section 239(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the common stock pursuant to an offer made under Section 275 of the SFA except:

- (a) to an institutional investor pursuant to Section 274 of the SFA or to a relevant person pursuant to Section 275(1) of the SFA, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;
- (b) where no consideration is or will be given for the transfer;
- (c) where the transfer is by operation of law;
- (d) as specified in Section 276(7) of the SFA; or
- (e) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore.

Switzerland

The shares of common stock may not be publicly offered in Switzerland and will not be listed on the SIX Swiss Exchange, or the SIX, or on any other stock exchange or regulated trading facility in Switzerland. This document has been prepared without regard to the disclosure standards for issuance prospectuses under art. 652a or art. 1156 of the Swiss Code of Obligations or the disclosure standards for listing prospectuses under art. 27 ff. of the SIX Listing Rules or the listing rules of any other stock exchange or regulated trading facility in Switzerland. Neither this document nor any other offering or marketing material relating to the shares of common stock or the offering may be publicly distributed or otherwise made publicly available in Switzerland.

Neither this document nor any other offering or marketing material relating to the offering, or the shares of common stock have been or will be filed with or approved by any Swiss regulatory authority. In particular, this document will not be filed with, and the offer of common stock will not be supervised by, the Swiss Financial Market Supervisory Authority FINMA, and the offer of common stock has not been and will not be authorized under the Swiss Federal Act on Collective Investment Schemes, or CISA. Accordingly, no public distribution, offering or advertising, as defined in CISA, its implementing ordinances and notices, and no distribution to any non-qualified investor, as defined in CISA, its implementing ordinances and notices, shall be undertaken in or from Switzerland, and the investor protection afforded to acquirers of interests in collective investment schemes under CISA does not extend to acquirers of common stock.

United Arab Emirates

This offering has not been reviewed, approved or licensed by the Central Bank of the United Arab Emirates (the "UAE"), the Emirates Securities and Commodities Authority of the UAE (the "SCA") and/or any other relevant licensing authority in the UAE including any licensing authority incorporated under the laws and regulations of any of the free zones established and operating in the territory of the UAE (the "Free Zones"), in particular the Dubai Financial Services Authority (the "DFSA"), a regulatory authority of the Dubai International Financial Centre (the "DIFC") or the Financial Services Regulatory Authority (the "FSRA"), a regulatory authority of Abu Dhabi Global Market ("ADGM").

This offering is not intended to, and does not, constitute an offer, sale or delivery of shares or other securities under the laws of the UAE. The common stock has not been and will not be registered with or licensed by the SCA or with the UAE Central Bank, the Dubai Financial Market, the Abu Dhabi Securities Exchange or with any other UAE regulatory authority or exchange.

The issue and/or sale of the common stock has not been approved or licensed by the SCA, the UAE Central Bank or any other relevant licensing authority in the UAE, and does not constitute a public offer of securities in the UAE, DIFC, ADGM and/or any other Free Zone in accordance with the Commercial Companies Law, Federal Law No 2 of 2015 (as amended), the Markets Rules of the DFSA, (the “DFSA Markets Rules”), the Markets Rules of the FSRA (the “FSRA Markets Rules”) and/or Nasdaq Dubai Listing Rules or under any other law of the UAE. The common stock may not be offered to the public in the UAE and/or any of the Free Zones.

No marketing or promotion of the common stock has been or will be made from within the UAE and no sale of or subscription for the common stock may or will be consummated within the UAE. It should not be assumed that Primo Water Corporation, Primo Water Corporation’s advisors, their advisors or any other person is a licensed broker, dealer or investment adviser under the laws of the UAE or that they advise as to the appropriateness of investing in or purchasing or selling securities or other financial products.

This offering is not intended to constitute a financial promotion, an offer, sale or delivery of shares or other securities under the DIFC Markets Law (DIFC Law No. 1 of 2012, as amended) (the “Markets Law”), the DFSA Markets Rules, the Collective Investment Law 2010 (DIFC Law No. 2 of 2010) (the “Collective Investment Law”), the ADGM Financial Services and Markets Regulations 2015 (the “FSMR”), the FSRA Markets Rules, the Funds Rules of the FSRA (“FSRA Funds Rules”), or any other laws and regulations of the DIFC, the DFSA, ADGM or the FSRA.

This offering and the issue or transfer of any securities related to it have not been approved or licensed by the DFSA, and do not constitute an offer of securities in the DIFC in accordance with the Markets Law or the DFSA Markets Rules or the Collective Investment Law or any other laws and regulations of the DIFC or the DFSA. This offering and the issue or transfer of any securities related to it have not been approved or licensed by the FSRA, and do not constitute an offer of securities in ADGM in accordance with the FSMR or the FSRA Markets Rules or the FSRA Funds Rules or any other laws and regulations of ADGM or the FSRA.

Notice to Prospective Investors in Israel

The securities offered by this prospectus supplement and the accompanying prospectus have not been approved or disapproved by the Israeli Securities Authority (the “ISA”), nor have such securities been registered for sale in Israel. The ISA has not issued permits, approvals or licenses in connection with the offering or publishing this prospectus supplement and the accompanying prospectus; nor has it authenticated the details included herein, confirmed their reliability or completeness, or rendered an opinion as to the quality of the securities being offered. The ordinary shares will not be offered or sold, directly or indirectly, to the public in Israel, except that the underwriters may offer and sell such shares to Israeli investors who qualify, in accordance with the Israeli Securities Law as “qualified investors” (as defined in the First Appendix to the Israeli Securities Law) and completed and signed a questionnaire regarding such qualification and delivered it to the underwriter. Any resale in Israel, directly or indirectly, to the public of the securities offered by this prospectus supplement and the accompanying prospectus is subject to restrictions on transferability and must be effected only in compliance with the Israeli securities laws and regulations.

LEGAL MATTERS

The validity of the securities offered by this prospectus will be passed upon for us by The Matt Law Firm, PLLC, Utica, New York. Certain legal matters will be passed upon for the underwriters by Lowenstein Sandler LLP, New York, New York.

EXPERTS

The financial statements incorporated in this prospectus supplement by reference to the Annual Report on Form 10-K for the fiscal year ended December 31, 2018 has been so incorporated in reliance on the report of Marcum LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended, and in accordance therewith file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission. The Securities and Exchange Commission maintains a website that contains reports, proxy and information statements and other information regarding registrants that file electronically with the Securities and Exchange Commission. The address of the Securities and Exchange Commission's website is www.sec.gov.

We make available free of charge on or through our website at www.actiniumpharma.com, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after we electronically file such material with or otherwise furnish it to the Securities and Exchange Commission.

We have filed with the Securities and Exchange Commission a registration statement under the Securities Act of 1933, as amended, relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus supplement does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement, at prescribed rates, from the Securities and Exchange Commission at the address listed above, or for free at www.sec.gov. The registration statement and the documents referred to below under "Incorporation of Certain Information By Reference" are also available on our website, www.actiniumpharma.com.

We have not incorporated by reference into this prospectus supplement the information on our website, and you should not consider it to be a part of this prospectus supplement.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The Securities and Exchange Commission allows us to “incorporate by reference” the information we have filed with it, which means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus supplement, and later information that we file with the Securities and Exchange Commission will automatically update and supersede this information. We incorporate by reference the documents listed below and any future documents (excluding information furnished pursuant to Items 2.02 and 7.01 of Form 8-K) we file with the Securities and Exchange Commission pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, subsequent to the date of this prospectus supplement and prior to the termination of the offering:

- Our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2018, filed with the Securities and Exchange Commission on March 15, 2019;
- Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, filed with the Securities and Exchange Commission on [May 10, 2019](#); our Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, filed with the Securities and Exchange Commission on [August 9, 2019](#); and our Quarterly Report on Form 10-Q for the quarter ended September 30, 2019, filed with the Securities and Exchange Commission on [November 12, 2019](#)
- the portions of our definitive proxy statement on [Schedule 14A](#) filed with the SEC on November 25, 2019 that are deemed “filed” with the SEC under the Exchange Act;
- Our Current Reports on Forms 8-K filed with the Securities and Exchange Commission on [March 12, 2019](#), [April 18, 2019](#), [June 7, 2019](#), [November 25, 2019](#), [December 3, 2019](#), [December 19, 2019](#), and [March 27, 2020](#); and
- The description of our common stock, which is contained in our Form 8-K/A, filed with the Securities and Exchange Commission on [January 28, 2013](#).

All filings filed by us pursuant to the Securities Exchange Act of 1934, as amended, after the date of the initial filing of this registration statement and prior to the effectiveness of such registration statement (excluding information furnished pursuant to Items 2.02 and 7.01 of Form 8-K) shall also be deemed to be incorporated by reference into the prospectus supplement.

You should rely only on the information incorporated by reference or provided in this prospectus supplement. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus supplement is accurate as of any date other than the date of this prospectus supplement or the date of the documents incorporated by reference in this prospectus supplement.

We will provide without charge to each person to whom a copy of this prospectus supplement is delivered, upon written or oral request, a copy of any or all of the information that has been incorporated by reference in this prospectus supplement but not delivered with this prospectus supplement (other than an exhibit to these filings, unless we have specifically incorporated that exhibit by reference in this prospectus supplement). Any such request should be addressed to us at: 275 Madison Avenue, 7th Floor, New York, New York 10016, Attention: Steve O’Loughlin, Vice President, Finance and Corporate Development, or made by phone at (646) 677-3870. You may also access the documents incorporated by reference in this prospectus supplement through our website at www.actiniumpharma.com. Except for the specific incorporated documents listed above, no information available on or through our website shall be deemed to be incorporated in this prospectus supplement or the accompanying prospectus.

ACTINIUM PHARMACEUTICALS, INC.



\$200,000,000
Common Stock
Preferred Stock
Debt Securities
Warrants
Rights
Purchase Contracts
Units

We may offer and sell from time to time, in one or more series or issuances and on terms that we will determine at the time of the offering, any combination of the securities described in this prospectus, up to an aggregate amount of \$200,000,000.

We will provide specific terms of any offering in a supplement to this prospectus. Any prospectus supplement may also add, update or change information contained in this prospectus. You should carefully read this prospectus and the applicable prospectus supplement as well as the documents incorporated or deemed to be incorporated by reference in this prospectus before you purchase any of the securities offered hereby.

These securities may be offered and sold in the same offering or in separate offerings; to or through underwriters, dealers and agents; or directly to purchasers. The names of any underwriters, dealers or agents involved in the sale of our securities, their compensation and any over-allotment options held by them will be described in the applicable prospectus supplement. See "Plan of Distribution."

Our common stock is presently traded on the NYSE American under the symbol "ATNM." On October 23, 2017, the last reported sale price of our common stock was \$0.72 per share. We recommend that you obtain current market quotations for our common stock prior to making an investment decision. We will provide information in any applicable prospectus supplement regarding any listing of securities other than shares of our common stock on any securities exchange.

You should carefully read this prospectus, any prospectus supplement relating to any specific offering of securities, and all information incorporated by reference herein and therein.

Investing in our securities involves a high degree of risk. These risks are discussed in this prospectus under "Risk Factors" beginning on page 8 and in the documents incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is October 24, 2017

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission using a “shelf” registration process. Under this shelf process, we may, from time to time, sell any combination of the securities described in this prospectus in one or more offerings up to a total amount of \$200,000,000.

This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may also add to, update or change information contained in the prospectus and, accordingly, to the extent inconsistent, information in this prospectus is superseded by the information in the prospectus supplement.

The prospectus supplement to be attached to the front of this prospectus may describe, as applicable: the terms of the securities offered; the public offering price; the price paid for the securities; net proceeds; and the other specific terms related to the offering of the securities.

You should only rely on the information contained or incorporated by reference in this prospectus and any prospectus supplement or issuer free writing prospectus relating to a particular offering. No person has been authorized to give any information or make any representations in connection with this offering other than those contained or incorporated by reference in this prospectus, any accompanying prospectus supplement and any related issuer free writing prospectus in connection with the offering described herein and therein, and, if given or made, such information or representations must not be relied upon as having been authorized by us. Neither this prospectus nor any prospectus supplement nor any related issuer free writing prospectus shall constitute an offer to sell or a solicitation of an offer to buy offered securities in any jurisdiction in which it is unlawful for such person to make such an offering or solicitation. This prospectus does not contain all of the information included in the registration statement. For a more complete understanding of the offering of the securities, you should refer to the registration statement, including its exhibits.

You should read the entire prospectus and any prospectus supplement and any related issuer free writing prospectus, as well as the documents incorporated by reference into this prospectus or any prospectus supplement or any related issuer free writing prospectus, before making an investment decision. Neither the delivery of this prospectus or any prospectus supplement or any issuer free writing prospectus nor any sale made hereunder shall under any circumstances imply that the information contained or incorporated by reference herein or in any prospectus supplement or issuer free writing prospectus is correct as of any date subsequent to the date hereof or of such prospectus supplement or issuer free writing prospectus, as applicable. You should assume that the information appearing in this prospectus, any prospectus supplement or any document incorporated by reference is accurate only as of the date of the applicable documents, regardless of the time of delivery of this prospectus or any sale of securities. Our business, financial condition, results of operations and prospects may have changed since that date.

PROSPECTUS SUMMARY

This summary provides an overview of selected information contained elsewhere or incorporated by reference in this prospectus and does not contain all of the information you should consider before investing in our securities. You should carefully read the prospectus, the information incorporated by reference and the registration statement of which this prospectus is a part in their entirety before investing in our securities, including the information discussed under "Risk Factors" in this prospectus and the documents incorporated by reference and our financial statements and notes thereto that are incorporated by reference in this prospectus. As used in this prospectus, unless the context otherwise indicates, the terms "we," "our," "us," or "the Company" refer to Actinium Pharmaceuticals, Inc., a Delaware corporation, and its subsidiaries taken as a whole.

The Company

Business Overview

We are a clinical-stage biopharmaceutical company focused on developing and commercializing targeted therapies for safer myeloablation and conditioning of the bone marrow prior to a bone marrow transplant, or BMT, and for the targeting and killing of cancer cells. We are currently conducting clinical trials for our three product candidates, Iomab-B, Actimab-A and Actimab-M, as well as performing research on other potential drug candidates utilizing our proprietary alpha-particle technology platform. Our most advanced product candidate, Iomab-B, is comprised of an anti-CD45 monoclonal antibody labeled with iodine-131, or I-131. We are currently conducting a pivotal Phase 3 trial of Iomab-B for myeloablation and conditioning of the bone marrow prior to a BMT for patients with relapsed or refractory acute myeloid leukemia (AML) age 55 and older. A BMT is a potentially curative treatment option for patients with AML and other blood cancers including leukemias, lymphomas and multiple myeloma as well as certain blood disorders. Upon successful completion of our Phase 3 clinical trial for Iomab-B we intend to submit for marketing approval in the United States and European Union. Our most advanced alpha-particle based therapy, Actimab-A, is an anti-CD33 monoclonal antibody conjugated with the alpha-particle actinium-225 (Ac-225). Actimab-A is currently in a Phase 2 clinical trial for patients over the age of 60 who are newly diagnosed with AML and ineligible for standard induction chemotherapy. Actimab-M, our third product candidate, is the same anti-CD33 monoclonal antibody conjugated to Ac-225 but a different dose and dosing regimen. Actimab-M, is being studied in a Phase 1 trial for patients with refractory multiple myeloma. We expect our alpha-particle technology platform will generate additional drug candidates that we will progress in clinical trials ourselves and or out-license. We intend to develop a number of products for numerous types of cancer and derive revenue from partnering relationships worldwide and/or direct sales of our products primarily in the United States.

In December 2015, we announced that the U.S. Food and Drug Administration, or FDA, cleared our IND filing for Iomab-B. In June 2016, we announced the pivotal Phase 3 clinical trial for Iomab-B was initiated, and assuming that the trial meets its end points, it will form the basis for a Biologics Licensing Application (BLA). We established an agreement with the FDA that the path to a BLA submission would include a single, pivotal Phase 3 clinical study if it is successful. The population in this two arm, randomized, controlled, multicenter trial will be patients with relapsed or refractory AML over the age of 55. The trial size was set at 150 patients with 75 patients per arm. The primary endpoint in the pivotal Phase 3 trial is durable complete remission, defined as a complete remission lasting at least six months and the secondary endpoint will be overall survival at one year. We believe there are currently no effective treatments approved by the FDA for AML in this patient population and there is no defined standard of care. Iomab-B has completed several physicians-sponsored clinical trials examining its potential as a myeloconditioning regimen prior to BMT in various blood cancers, including the Phase 1/2 study in relapsed and/or refractory AML patients. The results of these studies in over 300 patients have demonstrated the potential of Iomab-B to create a new treatment paradigm for BMTs by expanding the pool to ineligible patients who do not have any viable treatment options currently; enabling a shorter and safer preparatory interval for BMT; reducing post-transplant complications; and showing a clear survival benefit including curative potential.

In September 2016, we initiated a Phase 2 clinical trial for Actimab-A. This Phase 2 clinical trial is a multicenter, open-label study that will enroll 53 patients. Patients will receive 2.0 $\mu\text{Ci}/\text{kg}$ /fractionated dose of Actimab-A via two injections given at day 1 and day 7. The Phase 2 trial is designed to evaluate complete response rates at up to day 42 after Actimab-A administration, including complete remission (CR), complete remission with incomplete platelet recovery, CRp, or complete remission with incomplete blood count recovery, or CRi. A formal interim analysis is scheduled for 31 patients, which is expected by the end of 2017. The Phase 2 clinical trial includes peripheral blast burden as an inclusion criteria and in patients with high peripheral blast, or PB, burden, the use of Hydroxyurea will be mandated with the goal of bringing peripheral blasts below 200/ μL , which we identified from two previously complete Phase 1 clinical trials totaling 38 patients. In addition, the use of granulocyte colony-stimulating factors, or GCSF, will be mandated. Low dose cytarabine has been eliminated from the protocol and the Phase 2 clinical trial will evaluate Actimab-A as a monotherapy. The secondary endpoint of the Phase 2 clinical trial will be overall survival.

In February 2017, we initiated a Phase 1 investigator initiated clinical trial to study Actimab-M in multiple myeloma. Multiple myeloma is a cancer of plasma cells that is currently incurable. The Phase 1 trial will enroll up to 12 patients with relapsed or refractory multiple myeloma who have positive CD33 expression. This Phase 1 study is designed as a dose escalation study intended to assess safety, establish maximum tolerable dose, or MTD, and assess efficacy. Patients will be administered Actimab-M on day 1 at an initial dose of 0.5 $\mu\text{Ci}/\text{kg}$ and then assessed at day 42 for safety and efficacy. The dose can be increased to 1.0 $\mu\text{Ci}/\text{kg}$ or reduced to 0.25 $\mu\text{Ci}/\text{kg}$ based on safety assessment that will evaluate dose limiting toxicities, or DLTs. Patients may receive up to eight cycles of therapy, but in no event will cumulative administration exceed 4.0 $\mu\text{Ci}/\text{kg}$ of Actimab-M.

Business Strategy

We intend to develop our most advanced clinical stage candidate, Iomab-B, through approval and if these efforts are successful, we may elect to commercialize Iomab-B on our own or with a partner in the United States and/or outside of the United States to out-license the rights to develop and commercialize the product to a strategic partner. We intend to develop Actimab-A and Actimab-M through Phase 2 proof of concept human clinical trial, a trial designed to provide data on the drug's efficacy, and 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 human trials with additional Ac-225 based product candidates 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 compete in the marketplace for cancer treatments estimated to reach 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, or mAb. 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 Ac-225 and the beta emitter I-131. I-131 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 Non-Hodgkin's Lymphoma, or NHL, and is also used experimentally with different carriers in other cancers. Ac-225 has many unique properties and we believe we are a leader in developing this alpha emitter for clinical applications using our proprietary alpha-particle technology.

Our most advanced products are Iomab-B, I-131 labeled anti-CD45 mAb for myeloablation of relapsed or refractory AML patients prior to a BMT and Actimab-A, Ac-225 conjugated to an anti-CD33 mAb for treatment of newly diagnosed AML, in patients ineligible for currently approved therapies. We recently began clinical development of Actimab-M, Ac-225 conjugated to an anti-CD33 mAb for the treatment of patients with refractory multiple myeloma. Iomab-B offers a potentially curative treatment for these patients, most of whom do not survive beyond one year after being diagnosed with this condition. Iomab-B has also demonstrated efficacy in BMT preparation for other blood cancer indications, including myelodysplastic syndrome, or MDS, acute lymphoblastic leukemia, or ALL, Hodgkin's Lymphoma, multiple myeloma and NHL. These are all follow-on indications for which Iomab-B can be developed and it is our intention to explore these opportunities at a future date. We believe the aggregate worldwide market potential for the treatment of AML, MDS, ALL, Hodgkin's Lymphoma, multiple myeloma and NHL is approximately \$4.1 billion.

In December 2015, we announced that the FDA cleared our IND filing for Iomab-B, and that we proceeded with a pivotal, Phase 3 clinical trial. We anticipate the Phase 3, controlled, randomized, pivotal trial will complete enrollment of patients by 2018 and assuming that the trial meets its endpoints, it will form the basis for a BLA. We, in our recently approved IND filing, established an agreement with the FDA that the path to a BLA submission would include a single, pivotal Phase 3 clinical study if it is successful. The population in this two arm, randomized, controlled, multicenter trial will be refractory and relapsed AML patients over the age of 55. The trial size was set at 150 patients with 75 patients per arm. The primary endpoint in the pivotal Phase 3 trial is durable complete remission, defined as a complete remission lasting at least six months and the secondary endpoint will be overall survival at one year. There are currently no effective treatments approved by the FDA for AML in this patient population and there is no defined standard of care. Iomab-B has completed several physicians sponsored clinical trials examining its potential as a conditioning regimen prior to BMT in various blood cancers, including the Phase 1/2 clinical trial in relapsed and/or refractory AML patients. The results of these clinical trials in over 300 patients have demonstrated the potential of Iomab-B to create a new treatment paradigm for BMTs by: expanding the pool to ineligible patients who do not have any viable treatment options currently; enabling a shorter and safer preparatory interval for BMT; reducing post-transplant complications; and showing a clear survival benefit including curative potential.

Other potential product opportunities in which significant preclinical work is being undertaken include metastatic colorectal cancer, metastatic prostate cancer and antiangiogenesis, which reduces the blood supply to solid tumors. We believe the worldwide market potential for the treatment of metastatic colorectal cancer is approximately \$4.8 billion, and we believe the worldwide market potential for the treatment of metastatic prostate cancer is approximately \$6.0 billion. We also believe the worldwide market potential for the treatment of Glioblastoma Multiforme, a potential indication based on an antiangiogenesis approach, is approximately \$1.1 billion. We estimate the market potential for these indications based on company research, published rates of disease incidence and company calculations based on costs of currently used therapies.

We believe that our biggest market opportunity lies in the applicability of our alpha-particle technology platform to a wide variety of cancer indications. A broad range of solid and blood borne cancers can be potentially targeted by mAbs to enable treatment with the alpha-particle technology. We believe that our alpha-particle technology could potentially be applied to mAbs that are already approved by the FDA to create more efficacious and/or safer drugs (“biobetters”).

In March 2016, the FDA granted orphan drug designation for Iomab-B and in October 2016, the European Medicines Agency, or EMA, granted orphan designation in the European Union, or EU, for Iomab-B. In November 2014, the FDA granted orphan-drug designation for Actimab-A and in May 2017 the EMA granted orphan designation in the EU for Actimab-A. The FDA, through its Office of Orphan Products Development, grants orphan status to drugs and biologic products that are intended for the safe and effective treatment, diagnosis or prevention of rare diseases or disorders that affect fewer than 200,000 people in the United States. Orphan drug designation provides a drug developer with certain benefits and incentives, including a period of marketing exclusivity if regulatory approval is ultimately received for the designated indication; potential tax credits on United States clinical trials; eligibility for orphan drug grants; and waiver of certain administrative fees. The EMA, through its Committee for Orphan Medicinal Products, or COMP, examines applications for orphan designation. To qualify for orphan designation, the prevalence of the condition must be less than 5 in 10,000, it must be life-threatening or chronically debilitating and there must be no satisfactory method of treating the condition. Sponsors who obtain orphan designation receive numerous incentives including protocol assistance, a reduction or waving of fees and 10 years of market exclusivity should the therapy be approved.

Clinical Trials

Iomab-B

Iomab-B is our lead product candidate currently in a pivotal Phase 3 multicenter clinical trial. It consists of the anti-CD45 monoclonal antibody BC8 and beta emitting radioisotope iodine 131 (I-131). The indication for that trial is bone marrow conditioning for BMT in patients with relapsed and refractory AML over the age of 55.

Previous Iomab-B clinical trials leading to the 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 all patients -1 yr survival ~40% for all patients -1 yr survival ~45% for pts 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 day 28

Ongoing Iomab-B clinical trials include:

Indications	Phase
Relapsed and refractory Hodgkin Lymphoma and NHL (adult)	Phase 1
Advanced AML, ALL and MDS (adult)	Phase 2
AML 1st remission (age 16-50)	Phase 2
High-risk MDS, advanced AML (age 16-50)	Phase 2

There are additional ongoing clinical trials with BC8 antibody labeled with yttrium 90 (Y-90).

Phase 3 Iomab-B clinical trial:

We obtained FDA’s comment and guidance on the Iomab-B Phase 3 clinical trial design, and the FDA identified the following design features as generally acceptable, dependent on the results of the trial:

- Single pivotal study, pending trial results;
- Patient population: refractory AML patients age of 55 and older, where refractory is defined as either primary failure to achieve a complete remission after 2 cycles of induction therapy; relapsed after 6 months in complete remission; second or higher relapse; or relapsed disease not responding to intensive salvage therapy;
- Trial arms: study arm and control arm with physician’s choice of conventional care with curative intent; and
- Trial size: 150 patients total (75 patients per arm).

Actimab-A

Actimab-A is currently in the Phase 2 portion of a multicenter Phase 1/2 clinical trial in AML. It consists of the anti-CD33 monoclonal antibody Lintuzumab and alpha emitting radioisotope actinium 225 (Ac-225). The indication in the ongoing trial is patients newly diagnosed with AML over the age of 60 that are ineligible for standard induction chemotherapy.

Previous clinical trials leading to this trial included:

- Phase 1 clinical trial with Bismab-A, the first generation product consisting of the same anti-CD33 monoclonal antibody Lintuzumab and Bi-213 alpha emitter, a daughter of Ac-225;
- Phase 1/2 clinical trial with Bismab-A, the first generation product consisting of the same monoclonal antibody Lintuzumab and Bi-213 alpha emitter, a daughter of Ac-225; and
- Dose escalating pilot Phase 1 clinical trial with Actimab-A, the current product consisting of the Lintuzumab monoclonal antibody and Ac-225 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. Bi-213 is a daughter, i.e., product of the degradation of Ac-225, with cancer cell killing properties similar to Ac-225 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 ($\mu\text{Ci}/\text{kg}$), 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 $\mu\text{Ci}/\text{kg}$. Maximum tolerated single dose in this trial was established at 3 $\mu\text{Ci}/\text{kg}$.

High potency means that a relatively low amount of drug is needed to produce a given effect. In preclinical and Phase 1 clinical studies, Actimab-A (^{225}Ac -lintuzumab) has demonstrated at least 500-1000 times higher potency than the first-generation predecessor (^{213}Bi -lintuzumab) upon which it is based. This difference is due to intrinsic physicochemical properties of Actimab-A that were first established *in vitro*, in which Actimab-A killed multiple cell lines at doses at least 1000 times lower (based on LD50 values) than Bismab-A analogs. Key factors in Actimab-A'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 ^{213}Bi).

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

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 (^{225}Ac)-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 (^{225}Ac)-Lintuzumab in Acute Myeloid Leukemia (AML)" *Blood (ASH Meeting Abstracts)* 2012.

Ongoing Actimab-A trial:

We have completed the Phase 1 portion of our first company sponsored Phase 1/2 multi-center trial with fractionated (two) doses of Actimab-A, for the treatment of patients newly diagnosed with AML over the age of 60. Actimab-A consists of an anti-CD33 monoclonal antibody (HuM195, also known as Lintuzumab) and the actinium 225 radioactive isotope attached to it. Results from the Phase 1 portion of the trial 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 Cycle 1 of therapy. Maximum tolerated dose (MTD) was not reached in this trial. We have elected to progress to the Phase 2 portion of the trial at 2.0 $\mu\text{Ci}/\text{kg}/\text{fraction}$, the highest dose level from the Phase 1 portion of the clinical trial.

The Phase 2 portion of the trial will enroll 53 patients and will study Actimab-A as a monotherapy. We received agreement from the FDA for multiple revisions to the protocol for the Phase 2 portion of the clinical trial that include:

- Removing the use of low dose cytarabine from the Phase 2 protocol;
- Stipulating Peripheral blast burden as an inclusion criteria with blasts of 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; and
- Mandating the use of granulocyte colony-stimulating factor (GCSF) support.

Bismab-A trials and the Phase 1 Actimab-A trial were focused on relapsed, refractory and other difficult to treat acute myeloid leukemia patients. The current Actimab-A multicenter Phase 1/2 trial is focused on patients newly diagnosed AML who have historically had better outcomes.

Intellectual Property

We have developed or in-licensed numerous patents and patent applications and possess substantial know-how and trade secrets relating to the development and manufacturing of our products. As of October 12, 2017, our patent portfolio includes: 68 issued and pending patent applications, of which 10 are issued in the United States, 15 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 continue 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 the use of Ac-225 and other alpha emitting isotopes attached to cancer specific carriers like monoclonal antibodies, methods for manufacturing key components of our product candidates including Ac-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, which will expire in 2018 and 2019, respectively. We own three issued patents and one pending patent in the United States and thirty-two patents outside of the United States related to the manufacturing of actinium in a cyclotron that will expire in 2027. We own or have licensed the rights to four issued patents and one pending patent in the United States and twenty-one patents outside of the United States related to the generation of radioimmunoconjugates that will expire in 2021, 2030 and 2032. 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, which 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 the Fred Hutchinson Cancer Research Center (FHCRC) in exchange for milestone payments, royalties and research support.

Patents related to the antibody component of Actimab-A 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 Ac-225 conjugated to antibodies have been exclusively licensed by us from MSKCC in exchange for license fees, research support payments, development milestone payments, 2% royalties on net sales for the term of the licensed patents or, if later, 10 years from first commercial sale, and 15% of any sublicense income we may receive. We source Ac-225 under an agreement with the Oak Ridge National Laboratory that expires at the end of 2017. We believe, but cannot guarantee, that we will be able to renew this contract for additional annual periods.

Corporate and Other Information

We were organized in the State of Nevada on October 6, 1997 and reorganized in the State of Delaware on March 20, 2013. Our principal executive offices are located at 275 Madison, 7th Floor, New York, New York 10016. Our telephone number is (646) 677-3870. Our website address is www.actiniumpharma.com. Information accessed through our website is not incorporated into this prospectus and is not a part of this prospectus.

The Securities We May Offer

The descriptions of the securities contained in this prospectus, together with the applicable prospectus supplements, summarize the material terms and provisions of the various types of securities that we may offer. We will describe in the applicable prospectus supplement relating to any securities the particular terms of the securities offered by that prospectus supplement. If we so indicate in the applicable prospectus supplement, the terms of the securities may differ from the terms we have summarized below. We will also include information in the prospectus supplement, where applicable, about material U.S. federal income tax considerations relating to the securities, and the securities exchange, if any, on which the securities will be listed.

We may sell from time to time, in one or more primary offerings, our common stock, preferred stock, debt securities, warrants, rights, purchase contracts or units, or any combination of the foregoing.

In this prospectus, we refer to the common stock, preferred stock, debt securities, warrants, rights, purchase contracts or units, or any combination of the foregoing securities to be sold by us in a primary offering collectively as “securities.” The total dollar amount of all securities that we may issue under this prospectus will not exceed \$200,000,000.

This prospectus may not be used to consummate a sale of securities unless it is accompanied by a prospectus supplement.

RISK FACTORS

An investment in our securities involves a high degree of risk. The prospectus supplement applicable to each offering of our securities will contain a discussion of the risks applicable to an investment in our securities. Before deciding whether to invest in our securities, you should carefully consider the specific factors discussed under the heading “Risk Factors” in the applicable prospectus supplement, together with all of the other information contained or incorporated by reference in the prospectus supplement or appearing or incorporated by reference in this prospectus. You should also consider the risks, uncertainties and assumptions discussed under Item 1A, “Risk Factors,” in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, all of which are incorporated herein by reference, as updated or superseded by the risks and uncertainties described under similar headings in the other documents that are filed after the date hereof and incorporated by reference into this prospectus and any prospectus supplement related to a particular offering. The risks and uncertainties we have described are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of these risks actually occurs, our business, business prospects, financial condition or results of operations could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment. Please also read carefully the section below entitled “Special Note Regarding Forward-Looking Statements.”

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, each prospectus supplement and the information incorporated by reference in this prospectus and each prospectus supplement contain “forward-looking statements,” which include information relating to future events, future financial performance, strategies, expectations, competitive environment and regulation. Words such as “may,” “should,” “could,” “would,” “predicts,” “potential,” “continue,” “expects,” “anticipates,” “future,” “intends,” “plans,” “believes,” “estimates,” and similar expressions, as well as statements in future tense, identify forward-looking statements. Forward-looking statements should not be read as a guarantee of future performance or results and will probably not be accurate indications of when such performance or results will be achieved. Forward-looking statements are based on information we have when those statements are made or our management’s good faith belief as of that time with respect to future events, and are subject to risks and uncertainties that could cause actual performance or results to differ materially from those expressed in or suggested by the forward-looking statements. Important factors that could cause such differences include, but are not limited to:

- our history of recurring losses and negative cash flows from operating activities, significant future commitments and the uncertainty regarding the adequacy of our liquidity to pursue our complete business objectives;
- our ability to complete clinical trials as anticipated and obtain and maintain regulatory approvals for our products;
- our ability to adequately protect our intellectual property;
- disputes over ownership of intellectual property;
- the risk that the data collected from our current and planned clinical trials may not be sufficient to demonstrate that our products is an attractive alternative to other products;
- intense competition in our industry, with competitors having substantially greater financial, technological, research and development, regulatory and clinical, manufacturing, marketing and sales, distribution and personnel resources than we do;
- entry of new competitors and products and potential technological obsolescence of our products;
- loss of a key customer or supplier;
- technical problems with our research and products and potential product liability claims;
- adverse economic conditions;
- adverse federal, state and local government regulation, in the United States;
- price increases for supplies;
- inability to carry out research, development and commercialization plans; and
- loss or retirement of key executives and research scientists.

You should review carefully the section entitled “Risk Factors” beginning on page 8 of this prospectus for a discussion of these and other risks that relate to our business and investing in our securities. The forward-looking statements contained or incorporated by reference in this prospectus or any prospectus supplement are expressly qualified in their entirety by this cautionary statement. We do not undertake any obligation to publicly update any forward-looking statement to reflect events or circumstances after the date on which any such statement is made or to reflect the occurrence of unanticipated events.

USE OF PROCEEDS

Unless otherwise indicated in the prospectus supplement, we currently intend to use the net proceeds from the sale of securities offered by this prospectus for general corporate purposes, including the advancement of our drug candidates in clinical trials, such as Iomab-B, Actimab-A and Actimab-M, research and development of our alpha-particle technology platform, preclinical trials, and to meet working capital needs.

Investors are cautioned, however, that expenditures may vary substantially from these uses. Investors will be relying on the judgment of our management, who will have broad discretion regarding the application of the proceeds of this offering. The amounts and timing of our actual expenditures will depend upon numerous factors, including the amount of cash generated by our operations, the amount of competition and other operational factors. We may find it necessary or advisable to use portions of the proceeds from this offering for other purposes.

From time to time, we evaluate these and other factors and we anticipate continuing to make such evaluations to determine if the existing allocation of resources, including the proceeds of this offering, is being optimized. Circumstances that may give rise to a change in the use of proceeds include:

- a change in development plan or strategy;
- the addition of new products or applications;
- technical delays;
- delays or difficulties with our clinical trials;
- negative results from our clinical trials;
- difficulty obtaining U.S. Food and Drug Administration approval; and
- the availability of other sources of cash including additional offerings, if any.

DESCRIPTION OF CAPITAL STOCK

The following description of common stock and preferred stock summarizes the material terms and provisions of the common stock and preferred stock that we may offer under this prospectus, but is not complete. For the complete terms of our common stock and preferred stock, please refer to our certificate of incorporation, as amended and our bylaws, as may be amended from time to time. While the terms we have summarized below will apply generally to any future common stock or preferred stock that we may offer, we will describe the specific terms of any series of preferred stock in more detail in the applicable prospectus supplement. If we so indicate in a prospectus supplement, the terms of any preferred stock we offer under that prospectus supplement may differ from the terms we describe below.

We have authorized 250,000,000 shares of capital stock, par value \$0.001 per share, of which 200,000,000 are shares of common stock and 50,000,000 are shares of preferred stock. On October 11, 2017, there were 79,380,158 shares of common stock issued and outstanding and no shares of preferred stock issued and outstanding. The authorized and unissued shares of common stock and the authorized and undesignated shares of preferred stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange on which our securities may be listed. Unless approval of our stockholders is so required, our board of directors does not intend to seek stockholder approval for the issuance and sale of our common stock or preferred stock.

We also have warrants that are outstanding, which are described below.

Common Stock

The holders of our common stock are entitled to one vote per share. Our certificate of incorporation does not provide for cumulative voting. Our directors are divided into three classes. At each annual meeting of stockholders, directors elected to succeed those directors whose terms expire are elected for a term of office to expire at the third succeeding annual meeting of stockholders after their election. The holders of our common stock are entitled to receive ratably such dividends, if any, as may be declared by our board of directors out of legally available funds; however, the current policy of our board of directors is to retain earnings, if any, for operations and growth. Upon liquidation, dissolution or winding-up, the holders of our common stock are entitled to share ratably in all assets that are legally available for distribution. The holders of our common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of any series of preferred stock, which may be designated solely by action of our board of directors and issued in the future.

Our common stock is listed on the NYSE American under the symbol "ATNM."

Preferred Stock

The board of directors is authorized, subject to any limitations prescribed by law, without further vote or action by the stockholders, to issue from time to time shares of preferred stock in one or more series. Each such series of preferred stock shall have such number of shares, designations, preferences, voting powers, qualifications, and special or relative rights or privileges as shall be determined by the board of directors, which may include, among others, dividend rights, voting rights, liquidation preferences, conversion rights and preemptive rights. Issuance of preferred stock by our board of directors may result in such shares having dividend and/or liquidation preferences senior to the rights of the holders of our common stock and could dilute the voting rights of the holders of our common stock.

Prior to the issuance of shares of each series of preferred stock, the board of directors is required by the Delaware General Corporation Law and our certificate of incorporation to adopt resolutions and file a certificate of designation with the Secretary of State of the State of Delaware. The certificate of designation fixes for each class or series the designations, powers, preferences, rights, qualifications, limitations and restrictions, including, but not limited to, some or all of the following:

- the number of shares constituting that series and the distinctive designation of that series, which number may be increased or decreased (but not below the number of shares then outstanding) from time to time by action of the board of directors;

- the dividend rate and the manner and frequency of payment of dividends on the shares of that series, whether dividends will be cumulative, and, if so, from which date;
- whether that series will have voting rights, in addition to any voting rights provided by law, and, if so, the terms of such voting rights;
- whether that series will have conversion privileges, and, if so, the terms and conditions of such conversion, including provision for adjustment of the conversion rate in such events as the board of directors may determine;
- whether or not the shares of that series will be redeemable, and, if so, the terms and conditions of such redemption;
- whether that series will have a sinking fund for the redemption or purchase of shares of that series, and, if so, the terms and amount of such sinking fund;
- whether or not the shares of the series will have priority over or be on a parity with or be junior to the shares of any other series or class in any respect;
- the rights of the shares of that series in the event of voluntary or involuntary liquidation, dissolution or winding up of the corporation, and the relative rights or priority, if any, of payment of shares of that series; and
- any other relative rights, preferences and limitations of that series.

Once designated by our board of directors, each series of preferred stock may have specific financial and other terms that will be described in a prospectus supplement. The description of the preferred stock that is set forth in any prospectus supplement is not complete without reference to the documents that govern the preferred stock. These include our certificate of incorporation and any certificates of designation that our board of directors may adopt.

All shares of preferred stock offered hereby will, when issued, be fully paid and non-assessable, including shares of preferred stock issued upon the exercise of preferred stock warrants or subscription rights, if any.

Although our board of directors has no intention at the present time of doing so, it could authorize the issuance of a series of preferred stock that could, depending on the terms of such series, impede the completion of a merger, tender offer or other takeover attempt.

Warrants

Common Stock Warrants

On December 27, 2013 and January 10, 2014, we issued common stock warrants to certain investors in a private placement of common stock and warrants (the "Common Stock Warrants"). The Common Stock Warrants have a five year term from each closing that occurred on December 27, 2013 and January 10, 2014, and are exercisable for an aggregate of up to 276,529 shares of our common stock at an initial per share exercise price of \$9.00, subject to adjustments as set forth below. As of October 11, 2017 we have 193,197 shares of Common Stock Warrants outstanding. We may also call this warrant for redemption upon written notice to all warrant holders at any time the closing price of the common stock exceeds \$15.00 (as may be adjusted pursuant to warrant agreement) for 20 consecutive trading days, as reported by Bloomberg, provided at such time there is an effective registration statement covering the resale of the shares underlying the warrants. In the 60 business days following the date the redemption notice is deemed given in accordance with the agreement, investors may choose to exercise this warrant or a portion of the warrant by paying the then applicable exercise price per share for every share exercised. Any shares not exercised on the last day of the exercise period will be redeemed by us at \$0.001 per share.

The exercise prices of the Common Stock Warrants are subject to adjustment upon certain events. If we at any time while the warrants remain outstanding and unexpired shall declare a dividend or make a distribution on the outstanding Common Stock payable in shares of its capital stock, or split, subdivide or combine the securities as to which purchase rights under this warrant exist into a different number of securities of the same class, the exercise price for such securities shall be proportionately decreased in the case of a dividend, split or subdivision or proportionately increased in the case of a combination.

Series B Warrants

The Series B Warrants have a five year term from December 19, 2012 and are exercisable for an aggregate of up to 1,559,505 shares of our common stock at an initial per share exercise price of \$2.48, subject to adjustment as set forth below. As of October 11, 2017, there were 1,317,195 warrants outstanding. These warrants have a cashless exercise provision. We also have a right of first refusal on the holder's sale of the warrant shares. We may also call this warrant for redemption upon written notice to all warrant holders at any time the closing price of the common stock exceeds \$1.50 (as may be adjusted pursuant to warrant agreement) for 20 consecutive trading days, as reported by Bloomberg, provided at such time there is an effective registration statement covering the resale of the shares underlying the warrants. In the 60 business days following the date the redemption notice is deemed given in accordance with the agreement, investors may choose to exercise this warrant or a portion of the warrant by paying the then applicable exercise price per share for every share exercised. Any shares not exercised on the last day of the exercise period will be redeemed by us at \$0.001 per share.

The exercise price of the Series B Warrants is subject to adjustment upon certain events. If we at any time while the warrants remain outstanding and unexpired shall declare a dividend or make a distribution on the outstanding Common Stock payable in shares of its capital stock, or split, subdivide or combine the securities as to which purchase rights under this warrant exist into a different number of securities of the same class, the exercise price for such securities shall be proportionately decreased in the case of a dividend, split or subdivision or proportionately increased in the case of a combination.

In addition, for so long as there are any warrants outstanding, if and whenever at any time and from time to time after the warrant issue date, as applicable, we shall issue any shares of common stock for no consideration or a consideration per share less than the exercise price, as applicable, then, forthwith upon such issue or sale, the warrants shall be subject to a proportional adjustment determined by multiplying such warrant exercise price by the following fraction:

$$\frac{N(0) + N(1)}{N(0) + N(2)}$$

Where:

N(0) = the number of shares of common stock outstanding (calculated on a Fully Diluted Basis) immediately prior to the issuance of such additional shares of common stock or common stock Equivalents;

N(1) = the number of shares of common stock which the aggregate consideration, if any (including the aggregate Net Consideration Per Share with respect to the issuance of common stock equivalents), received or receivable by us for the total number of such additional shares of common stock so issued or deemed to be issued would purchase at the warrant exercise price, as applicable, in effect immediately prior to such issuance; and

N(2) = the number of such additional shares of common stock so issued or deemed to be issued.

Stock Offering Warrants

The Stock Offering Warrants have a term ending on January 31, 2019 and are exercisable for an aggregate of up to 2,682,155 shares of our common stock at an initial per share exercise price of \$0.78, subject to adjustment as set forth below (anti-dilution). As of October 11, 2017, there were 1,239,997 warrants outstanding. These warrants have a cashless exercise provision. We also have a right of first refusal on the holder's sale of the warrant shares.

These warrants have a cashless exercise provision. We also have a right of first refusal on the holder's sale of the warrant shares. The exercise prices of the Stock Offering Warrants are subject to adjustment upon certain events. If we at any time while the warrants remain outstanding and unexpired shall declare a dividend or make a distribution on the outstanding Common Stock payable in shares of its capital stock, or split, subdivide or combine the securities as to which purchase rights under this warrant exist into a different number of securities of the same class, the exercise price for such securities shall be proportionately decreased in the case of a dividend, split or subdivision or proportionately increased in the case of a combination.

Consulting Firm Warrants

The Consulting Firm Warrants have a term ending on December 17, 2019 and are exercisable for an aggregate of up to 3,755,560 shares of the Company's common stock. As of October 11, 2017, there were 1,502,223 warrants outstanding. These warrants may not be exercised by the Holder upon less than 90 days prior written notice of such exercise and provided further that that the Holder may elect, in its sole discretion, to waive the Prior Notice Requirement, in whole or in part, upon 65 days prior written notice of such waiver. These warrants have a cashless exercise provision and were issued at an initial per share exercise price of \$0.001, subject to adjustment as if the Company at any time while the warrants remain outstanding and unexpired shall declare a dividend or make a distribution on the outstanding Common Stock payable in shares of its capital stock, or split, subdivide or combine the securities as to which purchase rights under this warrant exist into a different number of securities of the same class, the exercise price for such securities shall be proportionately decreased in the case of a dividend, split or subdivision or proportionately increased in the case of a combination. The warrants are also subject to piggy-back registration rights.

2015 Offering Warrants

The 2015 Offering Warrants have a term ending February 11, 2019 and are exercisable for an aggregate of up to 3,333,333 shares of our common stock at \$6.50 per share. As of October 11, 2017, there were 3,333,333 warrants outstanding. The exercise price and the number of warrant shares shall be adjusted from time to time if we at any time on or after the issuance date subdivides (by any stock split, stock dividend, recapitalization or otherwise) one or more classes of its outstanding shares of common stock into a greater number of shares, the exercise price in effect immediately prior to such subdivision will be proportionately reduced and the number of warrant shares will be proportionately increased. If we at any time on or after the issuance date combines (by combination, reverse stock split or otherwise) one or more classes of its outstanding shares of Common Stock into a smaller number of shares, the exercise price in effect immediately prior to such combination will be proportionately increased and the number of warrant shares will be proportionately decreased.

If at any time prior to the expiration date we grant, issue or sell any Options, Convertible Securities or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this warrant (without regard to any limitations on the exercise of this warrant) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of shares of common stock are to be determined for the grant, issue or sale of such Purchase Rights (provided, however, that to the extent that the Holder's right to participate in any such Purchase Right would result in the holder exceeding the Maximum Percentage, then the holder shall not be entitled to participate in such Purchase Right to such extent (or beneficial ownership of such shares of Common Stock as a result of such Purchase Right to such extent) and such Purchase Right to such extent shall be held in abeyance for the Holder until such time, if ever, as its right thereto would not result in the Holder exceeding the Maximum Percentage (as defined in the warrant), at which time the Holder shall be granted such right to the same extent as if there had been no such limitation).

Placement Agent Warrants

We have issued three types of warrants to the Placement Agent, Placement Agent Stock Offering Warrants, Placement Agent Common Stock Warrants, and Placement Agent December 2013 Offering Warrants.

Placement Agent Stock Offering Warrants

The Placement Agent Stock Offering Warrants have a term ending on January 31, 2019 and are exercisable for an aggregate of up to 1,251,022 shares of our common stock at an initial per share exercise price of \$0.78, subject to adjustment as set forth below (anti dilution). As of October 11, 2017, there were 355,293 warrants outstanding. These warrants have a cashless exercise provision. The exercise prices of the warrants are subject to adjustment upon certain events. If we at any time while the warrants remain outstanding and unexpired shall declare a dividend or make a distribution on the outstanding Common Stock payable in shares of its capital stock, or split, subdivide or combine the securities as to which purchase rights under this warrant exist into a different number of securities of the same class, the exercise price for such securities shall be proportionately decreased in the case of a dividend, split or subdivision or proportionately increased in the case of a combination.

Placement Agent Common Stock Warrants

The Placement Agent Common Stock Warrants have a five year term from January 28, 2013 and are exercisable for an aggregate of up to 467,845 shares of our common stock at an initial per share exercise price of \$2.48, subject to adjustment as set forth below. As of October 11, 2017, there were 298,065 warrants outstanding. These warrants have a cashless exercise provision. We may also call this warrant for redemption upon written notice to all warrant holders at any time the closing price of the common stock exceeds \$1.50 (as may be adjusted pursuant to warrant agreement) for 20 consecutive trading days, as reported by Bloomberg, provided at such time there is an effective registration statement covering the resale of the shares underlying the warrants. In the 60 business days following the date the redemption notice is deemed given in accordance with the agreement, investors may choose to exercise this warrant or a portion of the warrant by paying the then applicable exercise price per share for every share exercised. Any shares not exercised on the last day of the exercise period will be redeemed by us at \$0.001 per share.

The exercise prices of the warrants are subject to adjustment upon certain events. If we at any time while the warrants remain outstanding and unexpired shall declare a dividend or make a distribution on the outstanding Common Stock payable in shares of its capital stock, or split, subdivide or combine the securities as to which purchase rights under this warrant exist into a different number of securities of the same class, the exercise price for such securities shall be proportionately decreased in the case of a dividend, split or subdivision or proportionately increased in the case of a combination.

In addition, for so long as there are any warrants outstanding, if and whenever at any time and from time to time after the warrant issue date, as applicable, we shall issue any shares of common stock for no consideration or a consideration per share less than the exercise price, as applicable, then, forthwith upon such issue or sale, the warrants shall be subject to a proportional adjustment determined by multiplying such warrant exercise price by the following fraction:

$$\frac{N(0) + N(1)}{N(0) + N(2)}$$

Where:

N(0) = the number of shares of common stock outstanding (calculated on a Fully Diluted Basis) immediately prior to the issuance of such additional shares of common stock or common stock Equivalents;

N(1) = the number of shares of common stock which the aggregate consideration, if any (including the aggregate Net Consideration Per Share with respect to the issuance of common stock equivalents), received or receivable by the Company for the total number of such additional shares of common stock so issued or deemed to be issued would purchase at the warrant exercise price, as applicable, in effect immediately prior to such issuance; and

N(2) = the number of such additional shares of common stock so issued or deemed to be issued.

Placement Agent December 2013 Offering Warrants

The Placement Agent December 2013 Offering Warrants have a five year term from January 10, 2014 and are exercisable for an aggregate of up to 138,265 shares of our common stock at an initial per share exercise price of \$9.00, subject to adjustment as set forth below. As of October 11, 2017, there were 124,997 warrants outstanding. These warrants have a cashless exercise provision. We may also call this warrant for redemption upon written notice to all warrant holders at any time the closing price of the common stock exceeds \$15.00 (as may be adjusted pursuant to warrant agreement) for 20 consecutive trading days, as reported by Bloomberg, provided at such time there is an effective registration statement covering the resale of the shares underlying the warrants. In the 60 business days following the date the redemption notice is deemed given in accordance with the agreement, investors may choose to exercise this warrant or a portion of the warrant by paying the then applicable exercise price per share for every share exercised. Any shares not exercised on the last day of the exercise period will be redeemed by us at \$0.001 per share.

The exercise prices of the warrants are subject to adjustment upon certain events. If we at any time while the warrants remain outstanding and unexpired shall declare a dividend or make a distribution on the outstanding Common Stock payable in shares of its capital stock, or split, subdivide or combine the securities as to which purchase rights under this warrant exist into a different number of securities of the same class, the exercise price for such securities shall be proportionately decreased in the case of a dividend, split or subdivision or proportionately increased in the case of a combination.

Consultant Warrants.

As of October 11, 2017, we had outstanding warrants exercisable for 507,833 shares of common stock issued to various consultants in consideration for services. The exercise prices range from \$0.98 to \$11.66 per share. These warrants do not have a cashless exercise provision.

2017 Warrants

In July 2017 in connection with an offering, we issued warrants to purchase 18,275,000 shares of Common Stock (the “Warrants”). The Warrants are exercisable commencing on the issuance date at an exercise price equal to \$1.05 per whole share of common stock, subject to adjustments as provided under the terms of the Warrants. The Warrants are exercisable for five years from the date of issuance. These warrants do have a cashless exercise provision.

Registration Rights

On December 21, 2015, we entered into an Investor Rights Agreement (the “Investor Rights Agreement”) with Memorial Sloan Cancer Center (“MSKCC”). Under the terms of the Investor Rights Agreement, 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 has granted MSKCC unlimited Form S-3 registration rights with respect to its shares.

Delaware Anti-Takeover Law, Provisions of our Certificate of Incorporation and Bylaws

Delaware Anti-Takeover Law

We are subject to Section 203 of the Delaware General Corporation Law. Section 203 generally 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:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (i) shares owned by persons who are directors and also officers and (ii) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to the date of the transaction, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition involving the interested stockholder of 10% or more of the assets of the corporation;
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with, or controlling, or controlled by, the entity or person. The term “owner” is broadly defined to include any person that, individually, with or through that person’s affiliates or associates, among other things, beneficially owns the stock, or has the right to acquire the stock, whether or not the right is immediately exercisable, under any agreement or understanding or upon the exercise of warrants or options or otherwise or has the right to vote the stock under any agreement or understanding, or has an agreement or understanding with the beneficial owner of the stock for the purpose of acquiring, holding, voting or disposing of the stock.

The restrictions in Section 203 do not apply to corporations that have elected, in the manner provided in Section 203, not to be subject to Section 203 of the Delaware General Corporation Law or, with certain exceptions, which do not have a class of voting stock that is listed on a national securities exchange or authorized for quotation on the Nasdaq Stock Market or held of record by more than 2,000 stockholders. Our certificate of incorporation and bylaws do not opt out of Section 203.

Section 203 could delay or prohibit mergers or other takeover or change in control attempts with respect to us and, accordingly, may discourage attempts to acquire us even though such a transaction may offer our stockholders the opportunity to sell their stock at a price above the prevailing market price.

Certificate of Incorporation and Bylaws

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 common stock. Among other things, our certificate of incorporation and bylaws:

- permit our board of directors to issue up to 50,000,000 shares of preferred stock, without further action by the stockholders, with any rights, preferences and privileges as they may designate, including the right to approve an acquisition or other change in control;
- 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;
- divide our board of directors into three classes, with each class serving staggered three-year terms, with such three year term commencing on the election of a director on and after the 2014 annual meeting;
- do not provide for cumulative voting rights (therefore allowing the holders of a majority of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by our Chairman of the Board, board of directors, chief executive officer, or the holders of not less than one-tenth of all the shares entitled to vote at the meeting; and
- set forth an advance notice procedure with regard to business to be brought before a meeting of stockholders.

DESCRIPTION OF DEBT SECURITIES

We may issue debt securities from time to time, in one or more series, as either senior or subordinated debt or as senior or subordinated convertible debt. While the terms we have summarized below will apply generally to any debt securities that we may offer under this prospectus, we will describe the particular terms of any debt securities that we may offer in more detail in the applicable prospectus supplement. The terms of any debt securities offered under a prospectus supplement may differ from the terms described below. Unless the context requires otherwise, whenever we refer to the indenture, we are also referring to any supplemental indentures that specify the terms of a particular series of debt securities.

We will issue the debt securities under the indenture that we will enter into with the trustee named in the indenture. The indenture will be qualified under the Trust Indenture Act of 1939, as amended (“Trust Indenture Act”). We have filed the form of indenture as an exhibit to the registration statement of which this prospectus is a part, and supplemental indentures and forms of debt securities containing the terms of the debt securities being offered will be filed as exhibits to the registration statement of which this prospectus is a part or will be incorporated by reference from reports that we file with the SEC.

The following summary of material provisions of the debt securities and the indenture is subject to, and qualified in its entirety by reference to, all of the provisions of the indenture applicable to a particular series of debt securities. We urge you to read the applicable prospectus supplements and any related free writing prospectuses related to the debt securities that we may offer under this prospectus, as well as the complete indenture that contains the terms of the debt securities.

General Terms of the Indenture

The indenture does not limit the amount of debt securities that we may issue. It provides that we may issue debt securities up to the principal amount that we may authorize and may be in any currency or currency unit designated by us. Except for the limitations on consolidation, merger and sale of all or substantially all of our assets contained in the indenture, the terms of the indenture do not contain any covenants or other provisions designed to afford holders of any debt securities protection with respect to our operations, financial condition or transactions involving us.

We may issue the debt securities issued under the indenture as “discount securities,” which means they may be sold at a discount below their stated principal amount. These debt securities, as well as other debt securities that are not issued at a discount, may, for U.S. federal income tax purposes, be treated as if they were issued with “original issue discount,” or “OID,” because of interest payment and other characteristics. Special U.S. federal income tax considerations applicable to debt securities issued with original issue discount will be described in more detail in any applicable prospectus supplement.

We will describe in the applicable prospectus supplement the terms of the series of debt securities being offered, including:

- the title of the series of debt securities;
- any limit upon the aggregate principal amount that may be issued;
- the maturity date or dates;
- the form of the debt securities of the series;
- the applicability of any guarantees;
- whether or not the debt securities will be secured or unsecured, and the terms of any secured debt;
- whether the debt securities rank as senior debt, senior subordinated debt, subordinated debt or any combination thereof, and the terms of any subordination;

- if the price (expressed as a percentage of the aggregate principal amount thereof) at which such debt securities will be issued is a price other than the principal amount thereof, the portion of the principal amount thereof payable upon declaration of acceleration of the maturity thereof, or if applicable, the portion of the principal amount of such debt securities that is convertible into another security or the method by which any such portion shall be determined;
- the interest rate or rates, which may be fixed or variable, or the method for determining the rate and the date interest will begin to accrue, the dates interest will be payable and the regular record dates for interest payment dates or the method for determining such dates;
- our right, if any, to defer payment of interest and the maximum length of any such deferral period;
- if applicable, the date or dates after which, or the period or periods during which, and the price or prices at which, we may, at our option, redeem the series of debt securities pursuant to any optional or provisional redemption provisions and the terms of those redemption provisions;
- the date or dates, if any, on which, and the price or prices at which we are obligated, pursuant to any mandatory sinking fund or analogous fund provisions or otherwise, to redeem, or at the holder's option to purchase, the series of debt securities and the currency or currency unit in which the debt securities are payable;
- the denominations in which we will issue the series of debt securities, if other than denominations of \$1,000, and any integral multiple thereof;
- any and all terms, if applicable, relating to any auction or remarketing of the debt securities of that series and any security for our obligations with respect to such debt securities and any other terms which may be advisable in connection with the marketing of debt securities of that series;
- whether the debt securities of the series shall be issued in whole or in part in the form of a global security or securities; the terms and conditions, if any, upon which such global security or securities may be exchanged in whole or in part for other individual securities; and the depositary for such global security or securities;
- if applicable, the provisions relating to conversion or exchange of any debt securities of the series and the terms and conditions upon which such debt securities will be so convertible or exchangeable, including the conversion or exchange price, as applicable, or how it will be calculated and may be adjusted, any mandatory or optional (at our option or the holders' option) conversion or exchange features, the applicable conversion or exchange period and the manner of settlement for any conversion or exchange;
- if other than the full principal amount thereof, the portion of the principal amount of debt securities of the series which shall be payable upon declaration of acceleration of the maturity thereof;
- additions to or changes in the covenants applicable to the particular debt securities being issued, including, among others, the consolidation, merger or sale covenant;
- additions to or changes in the events of default with respect to the securities and any change in the right of the trustee or the holders to declare the principal, premium, if any, and interest, if any, with respect to such securities to be due and payable;
- additions to or changes in or deletions of the provisions relating to covenant defeasance and legal defeasance;
- additions to or changes in the provisions relating to satisfaction and discharge of the indenture;
- additions to or changes in the provisions relating to the modification of the indenture both with and without the consent of holders of debt securities issued under the indenture;
- the currency of payment of debt securities if other than U.S. dollars and the manner of determining the equivalent amount in U.S. dollars;

- whether interest will be payable in cash or additional debt securities at our or the holders' option and the terms and conditions upon which the election may be made;
- the terms and conditions, if any, upon which we will pay amounts in addition to the stated interest, premium, if any, and principal amounts of the debt securities of the series to any holder that is not a "United States person" for federal tax purposes;
- any restrictions on transfer, sale or assignment of the debt securities of the series; and
- any other specific terms, preferences, rights or limitations of, or restrictions on, the debt securities, any other additions or changes in the provisions of the indenture, and any terms that may be required by us or advisable under applicable laws or regulations.

Conversion or Exchange Rights

We will set forth in the prospectus supplement the terms on which a series of debt securities may be convertible into or exchangeable for our common stock or our other securities. We will include provisions as to settlement upon conversion or exchange and whether conversion or exchange is mandatory, at the option of the holder or at our option. We may include provisions pursuant to which the number of shares of our common stock or our other securities that the holders of the series of debt securities receive would be subject to adjustment.

Consolidation, Merger or Sale

Unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, the indenture will not contain any covenant that restricts our ability to merge or consolidate, or sell, convey, transfer or otherwise dispose of our assets as an entirety or substantially as an entirety. However, any successor to or acquirer of such assets (other than a subsidiary of ours) must assume all of our obligations under the indenture or the debt securities, as appropriate.

Events of Default Under the Indenture

Unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, the following are events of default under the indenture with respect to any series of debt securities that we may issue:

- if we fail to pay any installment of interest on any debt securities of that series, as and when the same shall become due and payable, and such default continues for a period of 90 days; provided, however, that a valid extension of an interest payment period by us in accordance with the terms of any indenture supplemental thereto shall not constitute a default in the payment of interest for this purpose;
- if we fail to pay the principal of (or premium, if any) on any debt securities of that series as and when the same shall become due and payable whether at maturity, upon redemption, by declaration or otherwise, or in any payment required by any sinking or analogous fund established with respect to that series; provided, however, that a valid extension of the maturity of such debt securities in accordance with the terms of any indenture supplemental thereto shall not constitute a default in the payment of principal or premium, if any;
- if we fail to observe or perform any other covenant or agreement with respect to that series contained in the indenture or otherwise established with respect to that series pursuant to the indenture, other than a covenant or agreement specifically included solely for the benefit of one or more debt securities other than that series, and our failure continues for 90 days after we receive written notice of such failure, requiring the same to be remedied and stating that such is a notice of default thereunder, from the trustee or holders of at least 25% in aggregate principal amount of the outstanding debt securities of the applicable series; and
- if specified events of bankruptcy, insolvency or reorganization occur.

If an event of default with respect to debt securities of any series occurs and is continuing, other than an event of default described in the last bullet point above, the trustee or the holders of at least 25% in aggregate principal amount of the outstanding debt securities of that series, by notice to us in writing, and to the trustee if notice is given by such holders, may declare the unpaid principal of (premium, if any) and accrued and unpaid interest, if any, due and payable immediately. If an event of default specified in the last bullet point above occurs with respect to us, the principal amount of and accrued interest, if any, of that series shall be automatically due and payable without any declaration or other action on the part of the trustee or any holder.

The holders of a majority in principal amount of the outstanding debt securities of an affected series may waive any default or event of default with respect to the series and its consequences, except defaults or events of default regarding payment of principal, premium, if any, or interest, unless we have cured the default or event of default in accordance with the indenture. Any waiver shall cure the default or event of default.

Subject to the terms of the indenture, if an event of default under an indenture shall occur and be continuing, the trustee will be under no obligation to exercise any of its rights or powers under such indenture at the request or direction of any of the holders of the applicable series of debt securities, unless such holders have offered the trustee reasonable indemnity. The holders of a majority in principal amount of the outstanding debt securities of any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee, or exercising any trust or power conferred on the trustee, with respect to the debt securities of that series, provided that:

- the direction so given by the holder is not in conflict with any law or the applicable indenture; and
- subject to its duties under the Trust Indenture Act, the trustee need not take any action that might involve it in personal liability or might be unduly prejudicial to the holders not involved in the proceeding.

A holder of the debt securities of any series will have the right to institute a proceeding under the indenture or to appoint a receiver or trustee, or to seek other remedies only if:

- the holder has given written notice to the trustee of a continuing event of default with respect to that series;
- the holders of at least 25% in aggregate principal amount of the outstanding debt securities of that series have made written request;
- such holders have offered to the trustee indemnity satisfactory to it against the costs, expenses and liabilities to be incurred by the trustee in compliance with the request; and
- the trustee does not institute the proceeding, and does not receive from the holders of a majority in aggregate principal amount of the outstanding debt securities of that series other inconsistent directions within 90 days after the notice, request and offer.

These limitations do not apply to a suit instituted by a holder of debt securities if we default in the payment of the principal, premium, if any, or interest on, the debt securities.

We will periodically file statements with the trustee regarding our compliance with specified covenants in the indenture.

Modification of Indenture; Waiver

We and the trustee may change an indenture without the consent of any holders with respect to specific matters:

- to cure any ambiguity, defect or inconsistency in the indenture or in the debt securities of any series;
- to comply with the provisions described above under “Description of Debt Securities—Consolidation, Merger or Sale;”
- to provide for uncertificated debt securities in addition to or in place of certificated debt securities;

- to add to our covenants, restrictions, conditions or provisions such new covenants, restrictions, conditions or provisions for the benefit of the holders of all or any series of debt securities, to make the occurrence, or the occurrence and the continuance, of a default in any such additional covenants, restrictions, conditions or provisions an event of default or to surrender any right or power conferred upon us in the indenture;
- to add to, delete from or revise the conditions, limitations, and restrictions on the authorized amount, terms, or purposes of issue, authentication and delivery of debt securities, as set forth in the indenture;
- to make any change that does not adversely affect the interests of any holder of debt securities of any series in any material respect;
- to provide for the issuance of and establish the form and terms and conditions of the debt securities of any series as provided above under “Description of Debt Securities—General” to establish the form of any certifications required to be furnished pursuant to the terms of the indenture or any series of debt securities, or to add to the rights of the holders of any series of debt securities;
- to evidence and provide for the acceptance of appointment under any indenture by a successor trustee; or
- to comply with any requirements of the SEC in connection with the qualification of any indenture under the Trust Indenture Act.

In addition, under the indenture, the rights of holders of a series of debt securities may be changed by us and the trustee with the written consent of the holders of at least a majority in aggregate principal amount of the outstanding debt securities of each series that is affected. However, unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, we and the trustee may make the following changes only with the consent of each holder of any outstanding debt securities affected:

- extending the fixed maturity of any debt securities of any series;
- reducing the principal amount, reducing the rate of or extending the time of payment of interest, or reducing any premium payable upon the redemption of any series of any debt securities; or
- reducing the percentage of debt securities, the holders of which are required to consent to any amendment, supplement, modification or waiver.

Discharge

Each indenture provides that we can elect to be discharged from our obligations with respect to one or more series of debt securities, except for specified obligations, including obligations to:

- provide for payment;
- register the transfer or exchange of debt securities of the series;
- replace stolen, lost or mutilated debt securities of the series;
- pay principal of and premium and interest on any debt securities of the series;
- maintain paying agencies;
- hold monies for payment in trust;
- recover excess money held by the trustee;
- compensate and indemnify the trustee; and
- appoint any successor trustee.

In order to exercise our rights to be discharged, we must deposit with the trustee money or government obligations sufficient to pay all the principal of, any premium, if any, and interest on, the debt securities of the series on the dates payments are due.

Form, Exchange and Transfer

We will issue the debt securities of each series only in fully registered form without coupons and, unless we provide otherwise in the applicable prospectus supplement, in denominations of \$1,000 and any integral multiple thereof. The indenture provides that we may issue debt securities of a series in temporary or permanent global form and as book-entry securities that will be deposited with, or on behalf of, The Depository Trust Company, or DTC, or another depository named by us and identified in a prospectus supplement with respect to that series. To the extent the debt securities of a series are issued in global form and as book-entry, a description of terms relating will be set forth in the applicable prospectus supplement.

At the option of the holder, subject to the terms of the indenture and the limitations applicable to global securities described in the applicable prospectus supplement, the holder of the debt securities of any series can exchange the debt securities for other debt securities of the same series, in any authorized denomination and of like tenor and aggregate principal amount.

Subject to the terms of the indenture and the limitations applicable to global securities set forth in the applicable prospectus supplement, holders of the debt securities may present the debt securities for exchange or for registration of transfer, duly endorsed or with the form of transfer endorsed thereon duly executed if so required by us or the security registrar, at the office of the security registrar or at the office of any transfer agent designated by us for this purpose. Unless otherwise provided in the debt securities that the holder presents for transfer or exchange, we will impose no service charge for any registration of transfer or exchange, but we may require payment of any taxes or other governmental charges.

We will name in the applicable prospectus supplement the security registrar, and any transfer agent in addition to the security registrar, that we initially designate for any debt securities. We may at any time designate additional transfer agents or rescind the designation of any transfer agent or approve a change in the office through which any transfer agent acts, except that we will be required to maintain a transfer agent in each place of payment for the debt securities of each series.

If we elect to redeem the debt securities of any series, we will not be required to:

- issue, register the transfer of, or exchange any debt securities of that series during a period beginning at the opening of business 15 days before the day of mailing of a notice of redemption of any debt securities that may be selected for redemption and ending at the close of business on the day of the mailing; or
- register the transfer of or exchange any debt securities so selected for redemption, in whole or in part, except the unredeemed portion of any debt securities we are redeeming in part.

Information Concerning the Trustee

The trustee, other than during the occurrence and continuance of an event of default under an indenture, undertakes to perform only those duties as are specifically set forth in the applicable indenture. Upon an event of default under an indenture, the trustee must use the same degree of care as a prudent person would exercise or use in the conduct of his or her own affairs. Subject to this provision, the trustee is under no obligation to exercise any of the powers given it by the indenture at the request of any holder of debt securities unless it is offered reasonable security and indemnity against the costs, expenses and liabilities that it might incur.

Payment and Paying Agents

Unless we otherwise indicate in the applicable prospectus supplement, we will make payment of the interest on any debt securities on any interest payment date to the person in whose name the debt securities, or one or more predecessor securities, are registered at the close of business on the regular record date for the interest.

We will pay principal of and any premium and interest on the debt securities of a particular series at the office of the paying agents designated by us, except that unless we otherwise indicate in the applicable prospectus supplement, we will make interest payments by check that we will mail to the holder or by wire transfer to certain holders. Unless we otherwise indicate in the applicable prospectus supplement, we will designate the corporate trust office of the trustee as our sole paying agent for payments with respect to debt securities of each series. We will name in the applicable prospectus supplement any other paying agents that we initially designate for the debt securities of a particular series. We will maintain a paying agent in each place of payment for the debt securities of a particular series.

All money we pay to a paying agent or the trustee for the payment of the principal of or any premium or interest on any debt securities that remains unclaimed at the end of two years after such principal, premium or interest has become due and payable (or such shorter period set forth in applicable escheat, abandoned or unclaimed property law) will be repaid to us, and the holder of the debt security thereafter may look only to us for payment thereof.

Governing Law

The indenture and the debt securities will be governed by and construed in accordance with the laws of the State of New York, except to the extent that the Trust Indenture Act is applicable.

DESCRIPTION OF WARRANTS

As of October 11, 2017, there were 27,147,183 shares of common stock that may be issued upon exercise of outstanding warrants.

We may issue warrants for the purchase of debt securities, common stock or preferred stock in one or more series. We may issue warrants independently or together with debt securities, common stock or preferred stock, and the warrants may be attached to or separate from these securities.

We will evidence each series of warrants by warrant certificates that we may issue under a separate agreement. We may enter into a warrant agreement with a warrant agent. Each warrant agent may be a bank that we select which has its principal office in the United States. We may also choose to act as our own warrant agent. We will indicate the name and address of any such warrant agent in the applicable prospectus supplement relating to a particular series of warrants.

We will describe in the applicable prospectus supplement the terms of the series of warrants, including:

- the offering price and aggregate number of warrants offered;
- if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;
- if applicable, the date on and after which the warrants and the related securities will be separately transferable;
- in the case of warrants to debt securities, purchase common stock or preferred stock, the number or amount of shares of common stock or preferred stock, as the case may be, purchasable upon the exercise of one warrant and the price at which and currency in which these shares may be purchased upon such exercise;
- the manner of exercise of the warrants, including any cashless exercise rights;
- the warrant agreement under which the warrants will be issued;
- the effect of any merger, consolidation, sale or other disposition of our business on the warrant agreement and the warrants;
- anti-dilution provisions of the warrants, if any;
- the terms of any rights to redeem or call the warrants;
- any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;
- the dates on which the right to exercise the warrants will commence and expire or, if the warrants are not continuously exercisable during that period, the specific date or dates on which the warrants will be exercisable;
- the manner in which the warrant agreement and warrants may be modified;
- the identities of the warrant agent and any calculation or other agent for the warrants;
- federal income tax consequences of holding or exercising the warrants;
- the terms of the securities issuable upon exercise of the warrants;
- any securities exchange or quotation system on which the warrants or any securities deliverable upon exercise of the warrants may be listed or quoted; and
- any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including, in the case of warrants to purchase common stock or preferred stock, the right to receive dividends, if any, or, payments upon our liquidation, dissolution or winding up or to exercise voting rights, if any.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to 5:00 P.M. eastern time, the close of business, on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required exercise price by the methods provided in the applicable prospectus supplement. We will set forth on the reverse side of the warrant certificate, and in the applicable prospectus supplement, the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and the warrant certificate properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant certificate are exercised, then we will issue a new warrant certificate for the remaining amount of warrants.

Enforceability of Rights By Holders of Warrants

Any warrant agent will act solely as our agent under the applicable warrant agreement and will not assume any obligation or relationship of agency or trust with any holder of any warrant. A single bank or trust company may act as warrant agent for more than one issue of warrants. A warrant agent will have no duty or responsibility in case of any default by us under the applicable warrant agreement or warrant, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a warrant may, without the consent of the related warrant agent or the holder of any other warrant, enforce by appropriate legal action the holder's right to exercise, and receive the securities purchasable upon exercise of, its warrants in accordance with their terms.

Warrant Agreement Will Not Be Qualified Under Trust Indenture Act

No warrant agreement will be qualified as an indenture, and no warrant agent will be required to qualify as a trustee, under the Trust Indenture Act. Therefore, holders of warrants issued under a warrant agreement will not have the protection of the Trust Indenture Act with respect to their warrants.

Governing Law

Each warrant agreement and any warrants issued under the warrant agreements will be governed by New York law.

DESCRIPTION OF RIGHTS

We may issue rights to our stockholders to purchase shares of our common stock or preferred stock. We may offer rights separately or together with one or more additional rights, debt securities, preferred stock, common stock or warrants, or any combination of those securities in the form of units, as described in the applicable prospectus supplement. Each series of rights will be issued under a separate rights agreement to be entered into between us and a bank or trust company, as rights agent. The rights agent will act solely as our agent in connection with the certificates relating to the rights of the series of certificates and will not assume any obligation or relationship of agency or trust for or with any holders of rights certificates or beneficial owners of rights. The following description sets forth certain general terms and provisions of the rights to which any prospectus supplement may relate. The particular terms of the rights to which any prospectus supplement may relate and the extent, if any, to which the general provisions may apply to the rights so offered will be described in the applicable prospectus supplement. To the extent that any particular terms of the rights, rights agreement or rights certificates described in a prospectus supplement differ from any of the terms described below, then the terms described below will be deemed to have been superseded by that prospectus supplement. We encourage you to read the applicable rights agreement and rights certificate for additional information before you decide whether to purchase any of our rights.

We will provide in a prospectus supplement the following terms of the rights being issued:

- the date on which stockholders entitled to the rights distribution will be determined;
- the aggregate number of shares of common stock or preferred stock purchasable upon exercise of the rights;
- the exercise price;
- the aggregate number of rights issued;
- the date, if any, on and after which the rights will be separately transferable;
- the date on which the ability to exercise the rights will commence, and the date on which such ability will expire;
- the conditions to the completion of the offering, if any;
- the withdrawal, termination and cancellation rights, if any;
- any applicable material U.S. federal income tax considerations; and
- any other terms of the rights, including terms, procedures and limitations relating to the distribution, exchange and exercise of the rights.

Each right will entitle the holder of rights to purchase, for cash, the number of shares of common stock or preferred stock at the exercise price provided in the applicable prospectus supplement. Rights may be exercised at any time up to the close of business on the expiration date for the rights provided in the applicable prospectus supplement.

Holders may exercise rights as described in the applicable prospectus supplement. Upon receipt of payment and the rights certificate properly completed and duly executed at the corporate trust office of the rights agent or any other office indicated in the prospectus supplement, we will, as soon as practicable, forward the shares of common stock or preferred stock, as applicable, purchasable upon exercise of the rights. If less than all of the rights issued in any rights offering are exercised, we may offer any unsubscribed securities directly to persons other than stockholders, to or through agents, underwriters or dealers or through a combination of such methods, including pursuant to standby arrangements, as described in the applicable prospectus supplement.

DESCRIPTION OF PURCHASE CONTRACTS

We may issue purchase contracts, including contracts obligating holders to purchase from us, and for us to sell to holders, a specific or variable number of our debt securities, shares of common stock, preferred stock, warrants or rights, or securities of an entity unaffiliated with us, or any combination of the above, at a future date or dates. Alternatively, the purchase contracts may obligate us to purchase from holders, and obligate holders to sell to us, a specific or variable number of our debt securities, shares of common stock, preferred stock, warrants, rights or other property, or any combination of the above. The price of the securities or other property subject to the purchase contracts may be fixed at the time the purchase contracts are issued or may be determined by reference to a specific formula described in the purchase contracts. We may issue purchase contracts separately or as a part of units each consisting of a purchase contract and one or more of our other securities described in this prospectus or securities of third parties, including U.S. Treasury securities, securing the holder's obligations under the purchase contract. The purchase contracts may require us to make periodic payments to holders or vice versa and the payments may be unsecured or pre-funded on some basis. The purchase contracts may require holders to secure the holder's obligations in a manner specified in the applicable prospectus supplement.

The applicable prospectus supplement will describe the terms of any purchase contracts in respect of which this prospectus is being delivered, including, to the extent applicable, the following:

- whether the purchase contracts obligate the holder or us to purchase or sell, or both purchase and sell, the securities subject to purchase under the purchase contract, and the nature and amount of each of those securities, or the method of determining those amounts;
- whether the purchase contracts are to be prepaid;
- whether the purchase contracts are to be settled by delivery, or by reference or linkage to the value, performance or level of the securities subject to purchase under the purchase contract;
- any acceleration, cancellation, termination or other provisions relating to the settlement of the purchase contracts;
- any applicable federal income tax considerations; and
- whether the purchase contracts will be issued in fully registered or global form.

The preceding description sets forth certain general terms and provisions of the purchase contracts to which any prospectus supplement may relate. The particular terms of the purchase contracts to which any prospectus supplement may relate and the extent, if any, to which the general provisions may apply to the purchase contracts so offered will be described in the applicable prospectus supplement. To the extent that any particular terms of the purchase contracts described in a prospectus supplement differ from any of the terms described above, then the terms described above will be deemed to have been superseded by that prospectus supplement. We encourage you to read the applicable purchase contract for additional information before you decide whether to purchase any of our purchase contracts.

DESCRIPTION OF UNITS

We may issue units comprised of one or more of the other securities described in this prospectus or any prospectus supplement in any combination. Each unit will be issued so that the holder of the unit is also the holder, with the rights and obligations of a holder, of each security included in the unit. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any times before a specified date or upon the occurrence of a specified event or occurrence.

The applicable prospectus supplement will describe:

- the designation and the terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any unit agreement under which the units will be issued;
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units; and
- whether the units will be issued in fully registered or global form.

PLAN OF DISTRIBUTION

We may sell the securities being offered pursuant to this prospectus to or through underwriters, through dealers, through agents, or directly to one or more purchasers or through a combination of these methods. The applicable prospectus supplement will describe the terms of the offering of the securities, including:

- the name or names of any underwriters, if any, and if required, any dealers or agents;
- the purchase price of the securities and the proceeds we will receive from the sale;
- any underwriting discounts and other items constituting underwriters' compensation;
- any discounts or concessions allowed or re-allowed or paid to dealers; and
- any securities exchange or market on which the securities may be listed or traded.

We may distribute the securities from time to time in one or more transactions at:

- a fixed price or prices, which may be changed;
- market prices prevailing at the time of sale, directly by us or through a designated agent;
- prices related to such prevailing market prices; or
- negotiated prices.

Only underwriters named in the prospectus supplement are underwriters of the securities offered by the prospectus supplement.

If underwriters are used in an offering, we will execute an underwriting agreement with such underwriters and will specify the name of each underwriter and the terms of the transaction (including any underwriting discounts and other terms constituting compensation of the underwriters and any dealers) in a prospectus supplement. The securities may be offered to the public either through underwriting syndicates represented by managing underwriters or directly by one or more investment banking firms or others, as designated. If an underwriting syndicate is used, the managing underwriter(s) will be specified on the cover of the prospectus supplement. If underwriters are used in the sale, the offered securities will be acquired by the underwriters for their own accounts and may be resold from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. Any public offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time. Unless otherwise set forth in the prospectus supplement, the obligations of the underwriters to purchase the offered securities will be subject to conditions precedent, and the underwriters will be obligated to purchase all of the offered securities, if any are purchased.

We may grant to the underwriters options to purchase additional securities to cover over-allotments, if any, at the public offering price, with additional underwriting commissions or discounts, as may be set forth in a related prospectus supplement. The terms of any over-allotment option will be set forth in the prospectus supplement for those securities.

If we use a dealer in the sale of the securities being offered pursuant to this prospectus or any prospectus supplement, we will sell the securities to the dealer, as principal. The dealer may then resell the securities to the public at varying prices to be determined by the dealer at the time of resale. The names of the dealers and the terms of the transaction will be specified in a prospectus supplement.

We may sell the securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, any agent will act on a best-efforts basis for the period of its appointment.

We may authorize agents or underwriters to solicit offers by institutional investors to purchase securities from us at the public offering price set forth in the prospectus supplement pursuant to delayed delivery contracts providing for payment and delivery on a specified date in the future. We will describe the conditions to these contracts and the commissions we must pay for solicitation of these contracts in the prospectus supplement.

In connection with the sale of the securities, underwriters, dealers or agents may receive compensation from us or from purchasers of the securities for whom they act as agents, in the form of discounts, concessions or commissions. Underwriters may sell the securities to or through dealers, and those dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters or commissions from the purchasers for whom they may act as agents. Underwriters, dealers and agents that participate in the distribution of the securities, and any institutional investors or others that purchase securities directly for the purpose of resale or distribution, may be deemed to be underwriters, and any discounts or commissions received by them from us and any profit on the resale of the common stock by them may be deemed to be underwriting discounts and commissions under the Securities Act of 1933, as amended.

We may provide agents, underwriters and other purchasers with indemnification against particular civil liabilities, including liabilities under the Securities Act of 1933, as amended, or contribution with respect to payments that the agents, underwriters or other purchasers may make with respect to such liabilities. Agents and underwriters may engage in transactions with, or perform services for, us in the ordinary course of business.

To facilitate the public offering of a series of securities, persons participating in the offering may engage in transactions that stabilize, maintain, or otherwise affect the market price of the securities. This may include over-allotments or short sales of the securities, which involves the sale by persons participating in the offering of more securities than have been sold to them by us. In addition, those persons may stabilize or maintain the price of the securities by bidding for or purchasing securities in the open market or by imposing penalty bids, whereby selling concessions allowed to underwriters or dealers participating in any such offering may be reclaimed if securities sold by them are repurchased in connection with stabilization transactions. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. Such transactions, if commenced, may be discontinued at any time. We make no representation or prediction as to the direction or magnitude of any effect that the transactions described above, if implemented, may have on the price of our securities.

Unless otherwise specified in the applicable prospectus supplement, any common stock sold pursuant to a prospectus supplement will be eligible for listing on a national securities exchange, such as the NYSE American or NASDAQ, subject to official notice of issuance. Any underwriters to whom securities are sold by us for public offering and sale may make a market in the securities, but such underwriters will not be obligated to do so and may discontinue any market making at any time without notice.

In order to comply with the securities laws of some states, if applicable, the securities offered pursuant to this prospectus will be sold in those states only through registered or licensed brokers or dealers. In addition, in some states securities may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and complied with.

LEGAL MATTERS

The validity of the securities offered by this prospectus will be passed upon by The Matt Law Firm, PLLC Utica, New York.

EXPERTS

The financial statements incorporated in this prospectus by reference to the Annual Report on Form 10-K for the fiscal year ended December 31, 2016 have been so incorporated in reliance on the report of GBH CPAs, PC, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended, and in accordance therewith file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission. Such reports, proxy statements and other information can be read and copied at the Securities and Exchange Commission's public reference facilities at 100 F Street, N.E., Washington, D.C. 20549, at prescribed rates. Please call the Securities and Exchange Commission at 1-800-732-0330 for further information on the operation of the public reference facilities. In addition, the Securities and Exchange Commission maintains a website that contains reports, proxy and information statements and other information regarding registrants that file electronically with the Securities and Exchange Commission. The address of the Securities and Exchange Commission's website is www.sec.gov.

We make available free of charge on or through our website at www.actiniumpharmaceuticals.com, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after we electronically file such material with or otherwise furnish it to the Securities and Exchange Commission.

We have filed with the Securities and Exchange Commission a registration statement under the Securities Act of 1933, as amended, relating to the offering of these securities. The registration statement, including the attached exhibits, contains additional relevant information about us and the securities. This prospectus does not contain all of the information set forth in the registration statement. You can obtain a copy of the registration statement, at prescribed rates, from the Securities and Exchange Commission at the address listed above, or for free at www.sec.gov. The registration statement and the documents referred to below under "Incorporation of Certain Information By Reference" are also available on our website, www.actiniumpharmaceuticals.com.

We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The Securities and Exchange Commission allows us to “incorporate by reference” the information we have filed with it, which means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is an important part of this prospectus, and later information that we file with the Securities and Exchange Commission will automatically update and supersede this information. We incorporate by reference the documents listed below and any future documents (excluding information furnished pursuant to Items 2.02 and 7.01 of Form 8-K) we file with the Securities and Exchange Commission pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, subsequent to the date of this prospectus and prior to the termination of the offering:

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the Securities and Exchange Commission on [March 16, 2017](#);
- Our Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2017, filed with the Securities and Exchange Commission on [May 15, 2017](#);
- Our Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2017, filed with the Securities and Exchange Commission on [August 4, 2017](#);
- Our Current Report on Form 8-K, filed with the Securities and Exchange Commission on [March 28, 2017](#);
- Our Current Report on Form 8-K, filed with the Securities and Exchange Commission on [May 11, 2017](#);
- Our Current Report on Form 8-K, filed with the Securities and Exchange Commission on [May 16, 2017](#);
- Our Current Report on Form 8-K/A, filed with the Securities and Exchange Commission on [May 26, 2017](#);
- Our Current Report on Form 8-K, filed with the Securities and Exchange Commission on [June 8, 2017](#);
- Our Current Report on Form 8-K, filed with the Securities and Exchange Commission on [June 9, 2017](#);
- Our Current Report on Form 8-K, filed with the Securities and Exchange Commission on [June 16, 2017](#);
- Our Current Report on Form 8-K, filed with the Securities and Exchange Commission on [July 3, 2017](#);
- Our Current Report on Form 8-K, filed with the Securities and Exchange Commission on [July 28, 2017](#);
- The description of our common stock, which is contained in our Form 8-K/A, filed with the Securities and Exchange Commission on [January 28, 2013](#).

All filings filed by us pursuant to the Securities Exchange Act of 1934, as amended, after the date of the initial filing of this registration statement and prior to the effectiveness of such registration statement (excluding information furnished pursuant to Items 2.02 and 7.01 of Form 8-K) shall also be deemed to be incorporated by reference into the prospectus.

You should rely only on the information incorporated by reference or provided in this prospectus. We have not authorized anyone else to provide you with different information. You should not assume that the information in this prospectus is accurate as of any date other than the date of this prospectus or the date of the documents incorporated by reference in this prospectus.

We will provide without charge to each person to whom a copy of this prospectus is delivered, upon written or oral request, a copy of any or all of the information that has been incorporated by reference in this prospectus but not delivered with this prospectus (other than an exhibit to these filings, unless we have specifically incorporated that exhibit by reference in this prospectus). Any such request should be addressed to us at: 275 Madison Avenue, 7th Floor, New York, New York 10016, Attention: Steve O’Loughlin, Principal Financial Officer, or made by phone at (646) 677-3875. You may also access the documents incorporated by reference in this prospectus through our website at www.actiniumpharmaceuticals.com. Except for the specific incorporated documents listed above, no information available on or through our website shall be deemed to be incorporated in this prospectus or the registration statement of which it forms a part.

100,833,334 Shares of Common Stock

Pre-Funded Warrants to Purchase up to 82,500,001 Shares
of Common Stock



Prospectus Supplement

Sole Book-Running Manager

H.C. Wainwright & Co.

Co-Managers

Maxim Group LLC

JonesTrading

April 21, 2020
