

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended **March 31, 2017**

or

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

For the transition period from _____ to _____

Commission File Number: **000-52446**

ACTINIUM PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or Other Jurisdiction of
Incorporation or Organization)

74-2963609

(I.R.S. Employer
Identification No.)

**275 Madison Ave, 7th Floor
New York, NY**

(Address of Principal Executive Offices)

10016

(Zip Code)

(646) 677-3870

(Registrant's Telephone Number, Including Area Code)

(Former Name, Former Address and Former Fiscal Year, if Changed Since Last Report)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes No

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

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
(Do not check if a smaller reporting company)		Emerging growth company	<input checked="" type="checkbox"/>

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of May 15, 2017: 58,446,754.

Actinium Pharmaceuticals, Inc.
FORM 10-Q
For quarterly period ended March 31, 2017

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PART I - FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

The accompanying consolidated financial statements have been prepared by the Company and are unaudited. In the opinion of management, all adjustments (which include only normal recurring adjustments) necessary to present fairly the financial position at March 31, 2017 and December 31, 2016, and the results of operations and cash flows for the three months ended March 31, 2017 and 2016 have been made. Certain information and footnote disclosures normally included in financial statements prepared in accordance with accounting principles generally accepted in the United States of America have been condensed or omitted. It is suggested that these financial statements be read in conjunction with the financial statements and notes thereto included in the Company's audited financial statements for the year ended December 31, 2016, filed with the SEC in the Company's Annual Report on Form 10-K on March 16, 2017. The results of operations for the three months ended March 31, 2017 are not necessarily indicative of the operating results for the full year.

Actinium Pharmaceuticals, Inc.
Consolidated Balance Sheets
(Unaudited)

	<u>March 31,</u> <u>2017</u>	<u>December 31,</u> <u>2016</u>
Assets		
Current Assets:		
Cash and cash equivalents	\$ 17,087,830	\$ 20,519,294
Restricted cash – current	-	34,733
Prepaid expenses and other current assets	<u>1,031,258</u>	<u>1,836,451</u>
Total Current Assets	18,119,088	22,390,478
Property and equipment, net of accumulated depreciation	75,942	88,549
Security deposit	<u>49,859</u>	<u>49,859</u>
Total Assets	<u>\$ 18,244,889</u>	<u>\$ 22,528,886</u>
Liabilities and Stockholders' Equity		
Current Liabilities:		
Accounts payable and accrued expenses	\$ 4,768,808	\$ 4,194,874
Accounts payable and accrued expenses - related parties	25,000	25,000
Derivative liabilities	<u>576,034</u>	<u>300,683</u>
Total Current Liabilities	<u>5,369,842</u>	<u>4,520,557</u>
Total Liabilities	<u>5,369,842</u>	<u>4,520,557</u>
Commitments and contingencies		
Stockholders' Equity:		
Preferred stock, \$0.001 par value; 50,000,000 shares authorized, 0 shares issued and outstanding	-	-
Common stock, \$0.001 par value; 200,000,000 shares authorized; 57,152,399 and 55,801,742 shares issued and outstanding, respectively	57,152	55,802
Additional paid-in capital	157,431,280	154,504,329
Accumulated deficit	<u>(144,613,385)</u>	<u>(136,551,802)</u>
Total Stockholders' Equity	<u>12,875,047</u>	<u>18,008,329</u>
Total Liabilities and Stockholders' Equity	<u>\$ 18,244,889</u>	<u>\$ 22,528,886</u>

See accompanying notes to the unaudited consolidated financial statements.

Actinium Pharmaceuticals, Inc.
Consolidated Statements of Operations
(Unaudited)

	For the Three Months Ended March 31,	
	2017	2016
Revenue	\$ -	\$ -
Operating expenses:		
Research and development, net of reimbursements	4,504,351	3,765,452
General and administrative	3,280,317	2,218,467
Depreciation expense	20,920	18,120
Total operating expenses	<u>7,805,588</u>	<u>6,002,039</u>
Loss from operations	<u>(7,805,588)</u>	<u>(6,002,039)</u>
Other income (expense):		
Interest expense	-	(2,658)
Gain (loss) on change in fair value of derivative liabilities	(255,995)	1,601,399
Total other income (expense)	<u>(255,995)</u>	<u>1,598,741</u>
Net loss	<u>\$ (8,061,583)</u>	<u>\$ (4,403,298)</u>
Net loss per common share – basic and diluted	<u>\$ (0.14)</u>	<u>\$ (0.10)</u>
Weighted average common shares outstanding – basic and diluted	<u>55,892,878</u>	<u>44,253,793</u>

See accompanying notes to the unaudited consolidated financial statements.

Actinium Pharmaceuticals, Inc.
Consolidated Statements of Cash Flows
(Unaudited)

	For the Three Months Ended March 31,	
	2017	2016
Cash Flows From Operating Activities:		
Net loss	\$ (8,061,583)	\$ (4,403,298)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation expense	1,030,609	984,837
Depreciation expense	20,920	18,120
Loss (gain) on change in fair value of derivative liabilities	255,995	(1,601,399)
Changes in operating assets and liabilities:		
(Increase) decrease in:		
Prepaid expenses and other current assets	805,193	(133,606)
Increase (decrease) in:		
Accounts payable and accrued expenses	573,934	378,877
Net Cash Used In Operating Activities	<u>(5,374,932)</u>	<u>(4,756,469)</u>
Cash Flows From Investing Activities:		
Purchase of property and equipment	(8,313)	(27,590)
Payment for security deposit	-	(49,859)
Decrease of restricted cash	34,733	-
Net Cash Provided By (Used In) Investing Activities	<u>26,420</u>	<u>(77,449)</u>
Cash Flows From Financing Activities:		
Payments on note payable	-	(87,576)
Sales of common stock, net of offering costs	1,917,048	1,485,177
Net Cash Provided By Financing Activities	<u>1,917,048</u>	<u>1,397,601</u>
Net change in cash	(3,431,464)	(3,436,317)
Cash and cash equivalents at beginning of period	20,519,294	25,643,273
Cash and cash equivalents at end of period	<u>\$ 17,087,830</u>	<u>\$ 22,206,956</u>
Supplemental disclosures of cash flow information:		
Cash paid for interest	\$ -	\$ 2,658
Cash paid for income taxes	\$ -	\$ -
Supplemental disclosure of non-cash investing and financing activities:		
Transfer warrant derivatives from liability to equity classification	\$ -	\$ 17,455

See accompanying notes to the unaudited consolidated financial statements.

Actinium Pharmaceuticals, Inc.
Notes to Consolidated Financial Statements
(Unaudited)

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

Nature of Business - Actinium Pharmaceuticals, Inc. (the “Company” or “Actinium”) is a biopharmaceutical company developing innovative targeted therapies for patients with cancers lacking effective treatment options. Actinium’s proprietary platform utilizes monoclonal antibodies to deliver cytotoxic radioisotopes directly to cells of interest, such as cancer cells or cells of the bone marrow, in order to kill those cells safely and effectively. The Company’s lead product candidate, Iomab-B, consists of the radioisotope Iodine 131 (¹³¹I) coupled to BC8, an anti-CD45 monoclonal antibody. Iomab-B is designed to be used, upon approval, in preparing patients for a hematopoietic stem cell transplant (“HSCT”), commonly referred to as bone marrow transplant (“BMT”). A bone marrow transplant is often the only potential cure for patients with blood-borne cancers. However, the current standard preparation for a transplant requires chemotherapy and/or total body irradiation that result in significant toxicities. The Company is currently conducting a single pivotal 150-patient, multicenter Phase 3 clinical study of Iomab-B in patients with relapsed or refractory acute myeloid leukemia (AML) age 55 and older. The Company’s second product candidate, Actimab-A, consists of the radioisotope actinium-225 (²²⁵Ac) conjugated to HuM195, an anti-CD33 monoclonal antibody. Actimab-A is currently in a multicenter open-label, 53-patient Phase 2 trial for patients newly diagnosed with AML age 60 and over. In addition, Actinium is studying Actimab-M, which also consists of ²²⁵Ac conjugated to HuM195, an anti-CD33 monoclonal antibody, in a Phase 1 investigator initiated clinical trial in patients with relapsed or refractory multiple myeloma. Actinium is also utilizing its alpha-particle immunotherapy (APIT) technology platform to generate new drug candidates based on antibodies linked to the element Actinium-225 that are directed at various cancers that are blood-borne or form solid tumors. Actinium is also considering filing an application with the U.S. Food and Drug Administration (“FDA”) for breakthrough therapy designation for Actimab-A and/or Iomab-B. Actinium intends to develop a number of products for different types of cancer and derive revenue from partnering relationships with large pharmaceutical companies and/or direct sales of its products in specialty markets in the United States.

In December 2015, the Company announced that the FDA cleared the Company’s IND filing for Iomab-B, and that it will proceed with a pivotal, Phase 3 clinical trial. In June 2016, Actinium 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”) with the FDA. The Company, in its recently approved IND filing, established an agreement with the FDA that the path to a Biologics License Application 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 6 months and a secondary endpoint that 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 HSCT in various blood cancers, including the Phase 1/2 study in relapsed and/or refractory AML patients. The results of these studies in almost 300 patients have demonstrated the potential for Iomab-B to create a new treatment paradigm for bone marrow transplants by: expanding the pool to ineligible patients who do not have any viable treatment options currently; enabling a shorter and safer preparatory interval for HSCT; reducing post-transplant complications; and showing a clear survival benefit including curative potential.

In September 2016, we announced that 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 μCi/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, where complete response is defined as complete remission (“CR”) or complete remission with incomplete platelet recovery (CRp). The Phase 2 trial will include peripheral blast burden as an inclusion criteria and in patients with high peripheral blast (“PB”) burden, the use of Hydroxyurea will be mandated with the goal of bringing PB burden below a key threshold number that we have identified from two previously complete Phase 1 clinical trials totaling 38 patients. In addition, the use of granulocyte colony-stimulating factors (“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 trial will be overall survival.

In February 2017, we initiated a Phase 1 investigator initiated clinical trial to study Actimab-M in multiple myeloma (MM). 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 (MTD) and assess efficacy. Patients will be administered Actimab-M on day 1 at an initial dose of 0.5 μCi/kg and then assessed at day 42 for safety and efficacy. The dose can be increased to 1.0 μCi/kg or reduced to 0.25 μCi/kg based on safety assessment that will evaluate dose limiting toxicities (DLTs). Patients may receive up to 8 cycles of therapy but in no event will cumulative administration exceed 4.0 μCi/kg of Actimab-M.

Basis of Presentation - Unaudited Interim Financial Information – The accompanying unaudited interim consolidated financial statements and related notes have been prepared in accordance with accounting principles generally accepted in the United States of America (“U.S. GAAP”) for interim financial information, and in accordance with the rules and regulations of the United States Securities and Exchange Commission (the “SEC”) with respect to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by U.S. GAAP for complete financial statements. The unaudited interim consolidated financial statements furnished reflect all adjustments (consisting of normal recurring adjustments) which are, in the opinion of management, necessary for a fair statement of the results for the interim periods presented. Interim results are not necessarily indicative of the results for the full year. These unaudited interim consolidated financial statements should be read in conjunction with the audited consolidated financial statements of the Company for the year ended December 31, 2016 and notes thereto contained in the Company’s annual report on Form 10-K for the year ended December 31, 2016, as filed with the SEC on March 16, 2017.

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

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

Cash and Cash Equivalents - The Company considers all highly liquid accounts with original maturities of three months or less to be cash equivalents. Balances held by the Company are typically in excess of Federal Deposit Insurance Corporation insured limits. At March 31, 2017 and December 31, 2016, all of the Company’s cash was deposited in one bank.

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

Impairment of Long-Lived Assets - Management reviews long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount may not be realizable or at a minimum annually during the fourth quarter of the year. If an evaluation is required, the estimated future undiscounted cash flows associated with the asset are compared to the asset’s carrying value to determine if an impairment of such asset is necessary. The effect of any impairment would be to expense the difference between the fair value of such asset and its carrying value.

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

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

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

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

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

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

	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
Derivative liabilities:				
At March 31, 2017	\$ -	\$ -	\$ 576,034	\$ 576,034
At December 31, 2016	\$ -	\$ -	\$ 300,683	\$ 300,683

Income Taxes - The Company uses the asset and liability method in accounting for income taxes. Under this method, deferred tax assets and liabilities are determined based on differences between financial reporting and income tax carrying amounts of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. The Company reviews deferred tax assets for a valuation allowance based upon whether it is more likely than not that the deferred tax asset will be fully realized. A valuation allowance, if necessary, is provided against deferred tax assets, based upon management’s assessment as to their realization.

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

Share-Based Payments - The Company estimates the fair value of each stock option award at the grant date by using the Black-Scholes option pricing model. The fair value determined represents the cost for the award and is recognized over the vesting period during which an employee is required to provide service in exchange for the award. As share-based compensation expense is recognized based on awards ultimately expected to vest, the Company reduces the expense for estimated forfeitures based on historical forfeiture rates. Previously recognized compensation costs may be adjusted to reflect the actual forfeiture rate for the entire award at the end of the vesting period. Excess tax benefits, if any, are recognized as an addition to paid-in capital.

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

	March 31, 2017	March 31, 2016
Options	7,644,386	4,116,083
Warrants	8,955,388	8,770,313
Total	<u>16,599,774</u>	<u>12,886,396</u>

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

Recent Accounting Pronouncements – In April 2016, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) No. 2016-09, “*Compensation – Stock Compensation*” (Topic 718). The FASB issued this update to improve the accounting for employee share-based payments and affect all organizations that issue share-based payment awards to their employees. Several aspects of the accounting for share-based payment award transactions are simplified, including: (a) income tax consequences; (b) classification of awards as either equity or liabilities; and (c) classification on the statement of cash flows. The updated guidance is effective for annual periods beginning after December 15, 2016, including interim periods within those fiscal years. The guidance has been adopted effective January 1, 2017. The adoption of this guidance did not have any impact on the consolidated financial position, results of operations or cash flows.

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

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

Note 2 - Related Party Transactions

MSKCC:

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

The Company is obligated to make the following milestone payments:

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

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

On December 21, 2015, Actinium entered into an investor rights agreement with MSKCC. Under the terms of the agreement, MSKCC has agreed to forebear from transferring or otherwise disposing of its approximately 5.7 million shares of the Company’s common stock (other than pursuant to a piggyback registration as described below) until the start of the Actimab-A Phase 2 clinical study. The Company started the Actimab-A Phase 2 clinical study in September 2016. Thereafter, MSKCC was permitted to sell its shares subject to a weekly volume limitation of 150,000 shares (which limit may be increased to up to 250,000 shares per week to the extent any prior weekly allotments are not fully used) and applicable law so long as MSKCC maintains at least 25% of its current shareholding in Actinium through December 31, 2016. Actinium granted MSKCC piggyback registration rights that would be triggered in the event Actinium were to engage in a public registered offering of its shares for its own account where other shareholders are participating as selling shareholders or where such public registered offering is for the account of other selling shareholders. In addition, Actinium granted MSKCC unlimited Form S-3 registration rights with respect to its shares following December 31, 2016.

Placement Agent:

On December 9, 2013, the Company entered into an engagement agreement with a Healthcare Investment Bank (“Placement Agent”) as its placement agent for the 2013 Common Stock Offering whereby a director of the Company was the former Head of its Healthcare Investment Banking team (“the 2013 Offering”). The 2013 Offering was completed in two tranches, December 9, 2013 and January 10, 2014. The agreement entered in on December 9, 2013 included a cash fee equal to 10% of the gross proceeds raised, a non-accountable expense reimbursement equal to 2% of the gross proceeds raised and warrants to purchase shares of the Company’s Common Stock in an amount equal to 10% of the shares of common stock issued or issuable. Subsequent to the closing of the 2013 Offering, the placement agent continued to provide certain financial advisory services to the Company until three months after the Company had up-listed its securities for trading on a U.S. National Exchange for a monthly fee of \$25,000. On May 28, 2014, the Company and the placement agent agreed to terminate the December 9, 2013 engagement agreement. As of March 31, 2017 and December 31, 2016, the Company owed its placement agent \$25,000.

Note 3 - Prepaid Expenses and Other Current Assets

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

	March 31, 2017	December 31, 2016
Prepaid insurance	\$ 247,278	\$ 332,809
Prepaid clinical trial expenses	617,155	1,093,441
Other prepaid expenses	166,825	410,201
Total prepaid expenses and other current assets	<u>\$ 1,031,258</u>	<u>\$ 1,836,451</u>

Note 4 - Property and Equipment

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

	Lives	March 31, 2017	December 31, 2016
Lab equipment	3 years	\$ 116,070	\$ 116,070
Office equipment	3 years	151,246	142,933
Less: accumulated depreciation		(191,374)	(170,454)
Property and equipment, net		<u>\$ 75,942</u>	<u>\$ 88,549</u>

Depreciation expense for the three months ended March 31, 2017 and 2016 was \$20,920 and \$18,120, respectively.

Note 5 - Derivatives

The Company has determined that certain warrants the Company has issued contain provisions that protect holders from future issuances of the Company's common stock at prices below such warrants' respective exercise prices and these provisions could result in modification of the warrants' exercise price based on a variable that is not an input to the fair value of a "fixed-for-fixed" option as defined under FASB ASC Topic No. 815 - 40. The warrants granted in connection with the issuance of the 2012 Common Stock Offering, and the placement agent warrants contain anti-dilution provisions that provide for a reduction in the exercise price of such warrants in the event that future common stock (or securities convertible into or exercisable for common stock) is issued (or becomes contractually issuable) at a price per share (a "Lower Price") that is less than the exercise price of such warrant at the time. The amount of any such adjustment is determined in accordance with the provisions of the warrant agreement and depends upon the number of shares of common stock issued (or deemed issued) at the Lower Price and the extent to which the Lower Price is less than the exercise price of the warrant at the time.

Activities for derivative warrant instruments during the three months ended March 31, 2017 were as follows:

	Shares subject to warrants	Fair Value
Balance, December 31, 2016	1,615,260	\$ 300,683
Modification of warrants	-	19,356
Change in fair value	-	255,995
Balance, March 31, 2017	<u>1,615,260</u>	<u>\$ 576,034</u>

During the three months ended March 31, 2017, 9,364 warrants were exercised, of which none were derivative warrants.

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

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

	March 31, 2017	December 31, 2016
Market value of common stock on measurement date (1)	\$ 1.51	\$ 0.88
Adjusted exercise price	\$ 2.34	\$ 2.34
Risk free interest rate (2)	0.97%	0.85%
Warrant lives in years	2.0 years	2.0 years
Expected volatility (3)	71-74%	61 - 69%
Expected dividend yield (4)	-	-
Probability of stock offering in any period over 5 years (5)	0%~100%	100%
Offering price (6)	\$ 1.25	\$ 1.25

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

- (2) The risk-free interest rate was determined by management using the Treasury Bill rate as of the respective measurement date.
- (3) The volatility was estimated using the historical volatilities of the Company's common stock traded in NYSE MKT market.
- (4) Management determined the dividend yield to be 0% based upon its expectation that it will not pay dividends for the foreseeable future.
- (5) Management determines the probability of future stock offering at each evaluation date.
- (6) Represents the estimated offering price in future offerings as determined by management.

Note 6 - Commitments and Contingencies

License and Research Agreements

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

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

The Company agreed to make milestone payments totaling \$7,750,000 for the achievement of the following agreed to and contracted milestones:

Milestones	Date Met	Payments
(1) when Company initiates a Phase 1 Clinical Trial of a licensed product	July 24, 2012	\$ 750,000
(2) when Company initiates a Phase 2 Clinical Trial of a licensed product	September __, 2016	750,000
(3) when Company initiates a Phase 3 Clinical Trial of a licensed product	In future	1,500,000
(4) Biological License Application filing with U.S. FDA	In future	1,750,000
(5) First commercial sale	In future	1,500,000
(6) after the first \$10,000,000 in net sales	In future	1,500,000
Total		\$ 7,750,000

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

The Company met its first milestone in 2012 and upon reaching the milestone the Company paid AbbVie Biotherapeutics Corp. a milestone payment of \$750,000 on July 24, 2012. The milestone payment for the Phase 1 Clinical Trial was recorded as research and development expense. In September 2016, the Company met its second milestone and accrued \$750,000 as a research and development expense. As of March 31, 2017, the \$750,000 accrual was included in the accounts payable and accrued expenses on the balance sheet.

- b. MSKCC - see Note 2 - Related Party Transactions.
- c. Oak Ridge National Laboratory ("ORNL") – The Company is contracted to purchase radioactive material to be used for research and development, with a renewal option at the contract end. On January 9, 2017, the Company signed a contract with ORNL to purchase \$0.7 million of radioactive material. During the three months ended March 31, 2017 and 2016, the Company purchased approximately \$0.1 million and \$0.2 million, respectively, of radioactive material with ORNL.
- d. Icon Clinical Research, LLC ("Icon") provides project management services for the study of the drug Ac-225-HuM195 (Actimab-A) used in the Company's Phase 1 and Phase 2 clinical trials. The total project was estimated to cost approximately \$1.9 million and required a 12.5% down payment of the total estimated project cost. The down payment totaling \$0.2 million was paid in 2007 and 2012. On August 6, 2012, October 22, 2012 and May 16, 2013, the agreement was amended to provide for additional services. The total project is now estimated at approximately \$2.7 million. Icon invoices the Company when services are rendered and the Company records the related expense to research and development expense. For three months ended March 31, 2017 and 2016, the Company incurred expenses of approximately \$0 and \$0.2 million, respectively, related to this agreement.

- e. On June 15, 2012, the Company entered into a license and sponsored research agreement with Fred Hutchinson Cancer Research Center (“FHCRC”) to build upon previous and ongoing clinical trials, with BC8 (licensed antibody). FHCRC has currently completed both a Phase 1 and Phase 2 clinical trial with BC8 and the Company intends to start preparation for a pivotal trial leading to an FDA approval. The Company has been granted exclusive rights to the BC8 antibody and related master cell bank developed by FHCRC. The cost to develop the trial will range from \$13.2 million to \$23.5 million, depending on the trial design as required by the FDA. Under the terms of the sponsored research agreement, the Company will fund the FHCRC lab with \$0.2 million per year for the first two years and \$0.3 million thereafter. Payments made toward funding the lab will be credited toward royalty payments owed to FHCRC in the given year. A milestone payment of \$1 million will be due to FHCRC upon FDA approval of the first drug. Upon commercial sale of the drug, royalty payments of 2% of net sales will be due to FHCRC. For the three months ended March 31, 2017 and 2016, the Company incurred expenses of approximately \$27,000 and \$63,000, respectively, related to this agreement.
- f. On February 27, 2014, the Company entered into a manufacturing agreement with Goodwin Biotechnology Inc. (“Goodwin”). Goodwin oversees the current Good Manufacturing Practices (“cGMP”) production of a monoclonal antibody anticipated to be used in the phase 3 clinical trial of Iomab-B. Total cost of the agreement is \$6.8 million. The Company made a non-refundable payment of \$0.6 million upon execution of the agreement. Periodic payments will be made upon reaching certain milestones. As of March 31, 2017, the remaining cost of the service agreement (only) is approximately \$2.6 million. Goodwin bills the Company when services are rendered and the Company records the related expense to research and development costs. For the each of three months ended March 31, 2017 and 2016, the Company paid Goodwin approximately \$0.1 million.

As of March 31, 2017 and December 31, 2016, the Company owed Goodwin \$0.1 million.

- g. On February 16, 2016, the Company entered into a Contract Research Organizaition (“CRO”) agreement with Medpace, Inc. (“Medpace”). Medpace provides project management services for the study of Iomab-B used for the intended Phase 3 clinical trial. The total project is estimated to cost approximately \$7.2 million. Medpace bills the Company when services are rendered and the Company records the related expense to research and development costs. For the three months ended March 31, 2017 and 2016, the Company paid Medpace approximately \$0.4 million and \$0.9 million, respectively.
- h. On August 4, 2016, the Company entered into a CRO agreement with Vector Oncology Solutions, LLC (“Vector”). Vector provides project management services for the study of Actimab-A used for the intended Phase 2 clinical trial. The total project is estimated to cost approximately \$4.6 million. For the three months ended March 31, 2017, the Company paid Vector approximately \$0.2 million.

Lease Agreements

The Company does not own any real property. On March 10, 2016, effective as of January 1, 2016, Actinium entered into an Office Space License Agreement (the “License”) with Relmada Therapeutics, Inc. (“Relmada”), with whom we share two common board members, for office space located at 275 Madison Avenue, 7th Floor, New York, NY 10016. The License represents a substantial reduction in the per person cost over Actinium’s prior lease and the space allows for future growth. Both companies’ boards authorized the transaction. The term of the License is three years from the effective date, with an automatic renewal provision. The cost of the License is on a pass through basis for Relmada, and is approximately \$17,000 per month for Actinium, subject to customary escalations and adjustments.

In August 2016, the Company expanded its office space at 275 Madison Avenue, 6th Floor, New York, NY 10016, for an additional \$2,400 per month over a 12-month term.

Future minimum obligations on the lease are:

For the year ending December 31, 2018	199,440
Total	<u>\$ 199,440</u>

Note 7 - Equity

During the three months ended March 31, 2017, the Company issued 1,341,357 shares of common stock for gross proceeds of approximately \$2.0 million as part of its At-The-Market (“ATM”) sales agreement with an investment bank.

During the three months ended March 31, 2017, the Company issued 4,234 common shares for the cashless exercise of warrants.

Restricted Stock

During the three months ended March 31, 2017 and 2016, the Company recorded approximately \$45,000 and \$0.1 million, respectively, in stock-based compensation for all of the restricted shares outstanding.

During the three months ended March 31, 2017, the Company issued 5,000 common shares for restricted shares grant that became fully vested. As of March 31, 2017, the Company has yet to issue 148,408 common shares for restricted shares grant that has vested.

Stock Options

Following is a summary of option activities for the three months ended March 31, 2017:

	Number of Units	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding, December 31, 2016	5,906,886	\$ 3.52	7.90	51,704
Granted	2,260,500	1.36		
Cancelled	(523,000)	2.25		
Outstanding, March 31, 2017	<u>7,644,386</u>	2.97	8.27	855,064
Exercisable, March 31, 2017	<u>2,812,164</u>	4.73	6.45	413,494

During the three months ended March 31, 2017, the Company granted 2,260,500 options to purchase the Company’s common stock with an exercise price ranging from \$1.03 to \$1.58 per share, a term of 10 years, and a vesting period from 1 to 4 years. The options have an aggregated fair value of \$2,149,845 that was calculated using the Black-Scholes option-pricing model. Variables used in the Black-Scholes option-pricing model include: (1) discount rate range from 1.99% to 2.28% (2) expected life of 6 years, (3) expected volatility range from 80.27% to 81.74%, and (4) zero expected dividends. The estimate of expected option life was determined based on the “simplified method,” giving consideration to the overall vesting period and the contractual terms of the award. This method was used because the Company does not have sufficient historical option exercise data.

During the three months ended March 31, 2017, options to purchase 523,000 common shares were cancelled upon the termination of four employees.

The fair value of all options issued and outstanding are being amortized over their respective vesting periods. The unrecognized compensation expense at March 31, 2016 was approximately \$7.1 million. During the three months ended March 31, 2017 and 2016, the Company recorded total option expense of \$0.9 million and \$0.8 million respectively.

Warrants

Following is a summary of warrant activities for the three months ended March 31, 2017:

	<u>Number of Units</u>	<u>Weighted Average Exercise Price</u>	<u>Weighted Average Remaining Contractual Term (in years)</u>	<u>Aggregate Intrinsic Value</u>
Outstanding, December 31, 2016	8,964,752	3.72	1.95	1,445,786
Exercised	(9,364)	0.78	-	-
Outstanding, March 31, 2017	<u>8,955,388</u>	3.70	1.86	3,471,974
Exercisable, March 31, 2017	<u>8,612,888</u>	3.61	1.63	3,426,124

Certain warrants were issued to the Company's Executive Chairman as part of investment banking and advisory services either prior to and outside of his role as a Board Member and subsequently Executive Chairman. The Executive Chairman has refrained from exercising such warrants that are or have been in the money for most of their existing life in order to align with the long-term interests of the Company. On March 14, 2017, the Company canceled warrant to purchase 57,212 shares of Common Stock of the Company, dated December 19, 2012, issued to its Executive Chairman and issued a new warrant to its Executive Chairman to purchase 57,212 common shares with the term of the warrant expiring on February 11, 2022. The new warrant has the same exercise price in effect as the exercise price as the old warrant but the expiration date was modified from December 19, 2017 to February 11, 2022. The Company also amended the warrant to purchase Common Stock of the Company, dated January 31, 2012, issued to its Executive Chairman and an entity affiliated with its Executive Chairman to purchase 64,746 and 99,617 common shares, respectively. Pursuant to the terms of the warrant amendments, the term of the warrants was extended to February 11, 2022 from January 31, 2019. As a result of the replacement and modification, the Company recorded an additional expense of \$64,091 for the incremental fair value of the new warrants.

During the three months ended March 31, 2017, 9,364 warrants were exercised by the warrant holders. The Company issued 4,234 shares of common stock as a result of these cashless exercises.

During the three months ended March 31, 2017 and 2016, the Company recorded stock-based compensation expense related to the warrants of \$18,984 (excluding the \$64,091 addition expense due to the replacement and modification) and \$57,144, respectively.

Note 8 - Subsequent Events

Subsequent to March 31, 2017, the Company sold 1,292,355 shares of common stock for gross proceeds of \$1,965,791 as part of the Sales Agreements with MLV.

Subsequent to March 31, 2017, The Company also issued 2,000 common shares to an employee for vested grant.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATION

FORWARD-LOOKING STATEMENT NOTICE

This Form 10-Q contains certain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. For this purpose, any statements contained in this Form 10-Q that are not statements of historical fact may be deemed to be forward-looking statements. Without limiting the foregoing, words such as "may," "will," "expect," "believe," "anticipate," "estimate" or "continue" or comparable terminology are intended to identify forward-looking statements. These statements by their nature involve substantial risks and uncertainties, and actual results may differ materially depending on a variety of factors, many of which are not within our control. These factors include but are not limited to economic conditions generally and in the industries in which we may participate; competition within our chosen industry, including competition from much larger competitors; technological advances and failure to successfully develop business relationships.

Description of Business

Actinium is a biopharmaceutical company developing innovative targeted therapies for patients with cancers lacking effective treatment options. Actinium's proprietary platform utilizes monoclonal antibodies to deliver cytotoxic radioisotopes directly to cells of interest, such as cancer cells or cells of the bone marrow, in order to kill those cells safely and effectively. The Company's lead product candidate, Iomab-B, consists of the radioisotope Iodine 131 (^{131}I) coupled to BC8, an anti-CD45 monoclonal antibody. Iomab-B is designed to be used, upon approval, in preparing patients for a hematopoietic stem cell transplant ("HSCT"), commonly referred to as bone marrow transplant ("BMT"). A bone marrow transplant is often the only potential cure for patients with blood-borne cancers but the current standard preparation for a transplant requires chemotherapy and/or total body irradiation that result in significant toxicities. The Company is currently conducting a single pivotal 150-patient, multicenter Phase 3 clinical study of Iomab-B in patients with relapsed or refractory acute myeloid leukemia ("AML") age 55 and older. The Company's second product candidate, Actimab-A, consists of the radioisotope actinium-225 (^{225}Ac) conjugated to HuM1-195, an anti-CD33 monoclonal antibody. Actimab-A is currently in a multicenter open-label, 53-patient Phase 2 trial for patients newly diagnosed with AML age 60 and over. In addition, Actinium is studying Actimab-M, which also consists of ^{225}Ac conjugated to HuM195, an anti-CD33 monoclonal antibody, in a Phase 1 investigator initiated clinical trial in patients with relapsed or refractory multiple myeloma. Actinium is also utilizing its alpha-particle immunotherapy ("APIT") technology platform to generate new drug candidates based on antibodies linked to the element Actinium-225 that are directed at various cancers that are blood-borne or form solid tumors. Actinium is also considering filing an application with the U.S. Food and Drug Administration ("FDA") for breakthrough therapy designation for Actimab-A and/or Iomab-B. Actinium intends to develop a number of products for different types of cancer and derive revenue from partnering relationships with large pharmaceutical companies and/or direct sales of its products in specialty markets in the United States. We are currently manufacturing the antibody HuM195, which is a component of our Actimab-A and Actimab-M drug candidates that are currently in a Phase 2 and Phase 1 clinical trial, respectively. If we are unable to manufacture the HuM195 antibody in a timely fashion we may encounter delays in our clinical trials, which may impact our competitive position with these drug candidates.

In December 2015, we announced that the FDA cleared our Investigational New Drug Application ("IND") filing for Iomab-B, and that it will proceed with a pivotal, Phase 3 clinical trial. 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") with the FDA. The Company, in its recently approved IND filing, established an agreement with the FDA that the path to a Biologics License Application 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 6 months and a secondary endpoint that 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 HSCT in various blood cancers, including the Phase 1/2 study in relapsed and/or refractory AML patients. The results of these studies in almost 300 patients have demonstrated the potential for Iomab-B to create a new treatment paradigm for bone marrow transplants by: expanding the pool to ineligible patients who do not have any viable treatment options currently; enabling a shorter and safer preparatory interval for HSCT; reducing post-transplant complications; and showing a clear survival benefit including curative potential.

In September 2016, we announced that 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, where complete response is defined as complete remission ("CR") or complete remission with incomplete platelet recovery (CRp). The Phase 2 trial will include peripheral blast burden as an inclusion criteria and in patients with high peripheral blast ("PB") burden, the use of Hydroxyurea will be mandated with the goal of bringing PB burden below a key threshold number that we have identified from two previously complete Phase 1 clinical trials totaling 38 patients. In addition, the use of granulocyte colony-stimulating factors ("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 trial will be overall survival.

In February 2017, we initiated a Phase 1 investigator initiated clinical trial to study Actimab-M in multiple myeloma (“MM”). 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 (“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 (“DLTs”). Patients may receive up to 8 cycles of therapy but in no event will cumulative administration exceed 4.0 $\mu\text{Ci}/\text{kg}$ of Actimab-M.

We were incorporated under the laws of the State of Nevada on October 6, 1997.

Plan of Operation

We develop drugs for the treatment of cancer with the intent to cure or significantly improve survival of the affected patients. None of our drugs have been approved for sale in the United States or elsewhere. We have no commercial operations in sales or marketing of our products. All our product candidates are under development. In order to market and sell our products we must conduct clinical trials on patients and obtain regulatory approvals from appropriate regulatory agencies like the Food and Drug Administration (“FDA”) in the United States and similar agencies elsewhere in the world.

Our products under development are monoclonal antibodies labeled with radioisotopes. We have one program with an antibody labeled with a beta emitter and several programs based on a proprietary patent protected platform technology called APIT. Our APIT technology is based on attaching actinium 225 (Ac-225) or bismuth 213 (Bi-213) alpha emitting radioisotopes to monoclonal antibodies. Alpha emitting radioisotopes are unstable chemical elements that decay by releasing alpha particles. Alpha particles can kill any cell in the immediate proximity of where they are released. Monoclonal antibodies are genetically engineered proteins that specifically target certain cells, including cancer cells. It is crucial for the success of our drug candidates to contain monoclonal antibodies that can successfully seek cancer cells and can kill them with the attached isotope while not harming nearby normal cells. We do not have technology and operational capabilities to develop and manufacture such monoclonal antibodies and we therefore rely on collaboration with third parties to gain access to such monoclonal antibodies. We have secured rights to two monoclonal antibodies, HuM195 (Lintuzumab), in 2003 through a collaborative licensing agreement with AbbVie Biotherapeutics Corp and BC8 in 2012 with the Fred Hutchinson Cancer Research Center (“FHCRC”). We expect to negotiate collaborative agreements with other potential partners that would provide us with access to additional monoclonal antibodies. Establishing and maintaining such collaborative agreements is a key to our success as a company.

Under our own sponsorship as well as activity at FHCRC, we have five product candidates in active clinical trials: Actimab-A and Actimab-M (HuM195-Ac-225), Iomab-B (BC8-I-131), BC8-Y-90 and BC8-SA. At this time, the Company is actively pursuing development of Actimab-A and Iomab-B while Actimab-M, BC8-Y-90 and BC8-SA are in physician sponsored clinical phase 1 trials at Baylor and latter two at the FHCRC. Actimab-A is a combination of the monoclonal antibody we have in-licensed, Lintuzumab (HuM195), and the alpha emitting isotope actinium 225. Actimab-A has shown promising results throughout preclinical development and an ongoing clinical trial started in 2006 in AML in the elderly. We have expanded the number of patients and number of clinical centers by commencing a new AML clinical trial which we launched in 2012. This trial targets newly diagnosed AML patients over the age of 60. In order to conduct the trial we are engaged in funding, monitoring and quality assurance and control of the Lintuzumab antibody; procurement of actinium 225 isotope; funding, monitoring and quality assurance and control of the drug candidate Actimab-A manufacturing and organizing and monitoring clinical trials. We estimate that the direct costs to completion of both parts of the ongoing Phase 1/2 trial will be approximately \$7 million. Iomab-B is a combination of the in-licensed monoclonal antibody BC8 and the beta emitting radioisotope iodine 131. This construct has been extensively tested in Phase 1 and Phase 2 clinical trials in approximately 300 patients with different blood cancer indications who were in need of HSCT. Iomab-B is used to condition the bone marrow of these patients by destroying blood cancer cells in their bone marrow and elsewhere thus allowing for a subsequent transplant containing healthy donor bone marrow stem cells. We have decided to develop this drug candidate by initially focusing on the patients over 55 with active acute myeloid leukemia in relapse and/or refractory to existing treatments. On December 17, 2015, the FDA cleared our IND filing for Iomab-B, and that we are proceeding with the pivotal, Phase 3 clinical trial. We anticipate that the Phase 3, controlled, randomized, pivotal trial will continue enrolling patients in 2017. We estimate the direct costs of such a trial to completion anticipated in 2019 will be approximately \$25 million.

We have primarily management position employees and consultants who direct, organize and monitor the activities described above through contractors. Much of the in-vivo laboratory and clinical work contracted for by the Company was conducted at MSKCC in New York. We also made clinical trial arrangements with other well-known cancer centers. Our Actimab-A and Actimab-M drug candidates and its components are contract manufactured and maintained under our supervision by specialized contract manufacturers and suppliers in the United States, including IsoTex Diagnostics, Oak Ridge National Laboratory, Pacific GMP, Fischer Bioservices, BioReliance and others.

We have never generated revenue. Currently, we do not have a recurring source of revenues to cover our operating costs. For the three months ended March 31, 2017 and 2016, we incurred a net loss of approximately \$8.1 million and \$4.4 million, respectively. We believe that we have sufficient cash on hand to fund our operations through the next 12 months.

Opportunities, Challenges and Risks

The market for drugs for cancer treatment is a large market in need of novel products, in which successful products can command multibillion dollars in annual sales. A number of large pharmaceutical and biotechnology companies regularly acquire products in development, with preference given to products in Phase 2 or later clinical trials. These transactions are typically structured to include an upfront payment that ranges from several million dollars to tens of million dollars or more and additional milestone payments tied to regulatory submissions and approvals and sales milestones. Our goal is to develop our product candidates through Phase 2 clinical trials and enter into partnership agreements with one or more large pharmaceutical and/or biotechnology companies.

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

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

Results of Operations – Three Months Ended March 31, 2017 Compared to the Three Months Ended March 31, 2016

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

	For the Three Months Ended March 31,	
	2017	2016
Revenues	\$ -	\$ -
Operating expenses:		
Research and development, net of reimbursements	4,504,351	3,765,452
General and administrative	3,280,317	2,218,467
Depreciation expense	20,920	18,120
Total operating expenses	<u>7,805,588</u>	<u>6,002,039</u>
Other income (expense):		
Interest expense	-	(2,658)
Gain (loss) on change in fair value of derivative liabilities	(255,995)	1,601,399
Total other income (expense)	<u>(255,995)</u>	<u>1,598,741</u>
Net loss	<u>\$ (8,061,583)</u>	<u>\$ (4,403,298)</u>

Revenues

We recorded no commercial revenues for the three months ended March 31, 2017 and 2016.

Research and Development Expense

Research and development expenses increased by approximately \$0.7 million from \$3.8 million for the three months ended March 31, 2016 to approximately \$4.5 million for the three months ended March 31, 2017. The increase was primarily attributable to increase in Iomab-B manufacturing costs of approximately \$0.8 million which were partially offset by a decrease of approximately \$0.2 million in Actimab-A manufacturing costs. We expect to incur increased research and development costs in the future.

General and Administrative Expenses

Overall, total general and administrative expenses increased by approximately \$1.1 million from approximately \$2.2 million for the three months ended March 31, 2016 to \$3.3 million for the three months ended March 31, 2017. The increase was largely attributable to increases in salaries and stock compensation costs of \$0.6 million and other related expenses and professional services. We expect to incur increased general and administrative costs in the future.

Other Income (Expense)

Other expense for the three months ended March 31, 2017 was approximately \$0.3 million as compared to other income of approximately \$1.6 million for the three months ended March 31, 2016. The other income (expense) is mainly associated with changes in our warrant derivative liability. The change is attributable to the fluctuation of our stock price from \$1.99 per share at March 31, 2016 to \$1.51 per share at March 31, 2017.

Liquidity and Capital Resources

We have financed our operations primarily through sales of the Company's common stock.

We do not have any cash or cash equivalents held in financial institutions located outside of the United States as of March 31, 2017. We do not anticipate this practice will change in the future.

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

	For the Three Months Ended March 31,	
	2017	2016
Cash used in operating activities	\$ (5,374,932)	\$ (4,756,469)
Cash provided by (used in) investing activities	26,420	(77,449)
Cash provided by financing activities	1,917,048	1,397,601
Net change in cash	<u>\$ (3,431,464)</u>	<u>\$ (3,436,317)</u>

Net cash used in operating activities was approximately \$5.4 million and \$4.8 million for the three months ended March 31, 2017 and 2016, respectively. The change was mainly due to increased compensation paid as a result of higher headcount and increased payments for professional services and clinic trials.

Net cash provided by financing activities was approximately \$1.9 million and \$1.4 million for the three months ended March 31, 2017 and 2016, respectively. During the three months ended March 31, 2017, we issued common stock and received net proceeds of approximately \$1.9 million from the sale of our common stock through our ATM compared to approximately \$1.5 million received from the March 2016 finance. The issuance of stock was partially offset by payments on notes payable of \$0.1 million for the three months ended March 31, 2016.

Recent Equity Offerings

On March 24, 2014, we filed a shelf registration statement on Form S-3 (the "Registration Statement") and deemed effective on April 17, 2014. This Registration Statement contained two prospectuses: (i) a base prospectus which covers the offering, issuance and sale by the Company of up to \$200,000,000 of its common stock, preferred stock, warrants and/or units; and (ii) a sales agreement prospectus covering the offering, issuance and sale by us of up to a maximum aggregate offering price of \$75,000,000 of its common stock that may be issued and sold under a sales agreement (the "Sales Agreement") with MLV & Co. LLC ("MLV"). During the quarter ended March 31, 2017, the Company issued 1,341,357 shares of common stock for gross proceeds of \$2.0 million. Since inception of this agreement through March 31, 2017, the Company issued 10,472,469 shares of common stock for gross proceeds of \$24.1 million.

During the three months ended March 31, 2017, we issued 4,234 common shares for the cashless exercise of warrants and issued 5,000 common shares for restricted shares granted.

Off-Balance Sheet Arrangements

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

Seasonality

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

Critical Accounting Policies

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

Derivatives

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

Fair Value of Financial Instruments

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

- Level 1 Inputs – Unadjusted quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date.
- Level 2 Inputs – Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. These might include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable for the asset or liability (such as interest rates, volatilities, prepayment speeds, credit risks, etc.) or inputs that are derived principally from or corroborated by market data by correlation or other means.
- Level 3 Inputs – Unobservable inputs for determining the fair values of assets or liabilities that reflect an entity's own assumptions about the assumptions that market participants would use in pricing the assets or liabilities.

Research and Development Costs

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

Share-Based Payments

The Company estimates the fair value of each stock option award at the grant date by using the Black-Scholes option pricing model. The fair value determined represents the cost for the award and is recognized over the vesting period during which an employee is required to provide service in exchange for the award. As share-based compensation expense is recognized based on awards ultimately expected to vest, the Company reduces the expense for estimated forfeitures based on historical forfeiture rates. Previously recognized compensation costs may be adjusted to reflect the actual forfeiture rate for the entire award at the end of the vesting period. Excess tax benefits, if any, are recognized as an addition to paid-in capital.

Recent Accounting Pronouncements

In April 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-09, "*Compensation – Stock Compensation*" (topic 718). The FASB issued this update to improve the accounting for employee share-based payments and affect all organizations that issue share-based payment awards to their employees. Several aspects of the accounting for share-based payment award transactions are simplified, including: (a) income tax consequences; (b) classification of awards as either equity or liabilities; and (c) classification on the statement of cash flows. The updated guidance is effective for annual periods beginning after December 15, 2016, including interim periods within those fiscal years. The guidance has been adopted effective January 1, 2017. The adoption of this guidance did not have any impact on the consolidated financial position, results of operations or cash flows.

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

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

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Common Stock Price Risk

In December 2012, we issued common stock and warrants. Pursuant to ASC 815-40, we recorded the fair value of the warrants as a current liability. The fair value of the outstanding warrants is evaluated at each reporting period with any resulting change in the fair value being reflected in the condensed consolidated statements of operations. For the three months ended March 31, 2017 and 2016, we recognized the change in the value of warrants of approximately (\$0.3 million) and \$1.6 million, respectively, as a (loss) gain on the consolidated statement of operations. Fair value of the derivative instruments will be affected by estimates of various factors that may affect the respective instrument, including our stock price, the risk-free rate of return and expected volatility in the fair value of our stock price. As the fair value of this derivative may fluctuate significantly from period to period, the resulting change in valuation may have a significant impact on our results of operations.

On March 24, 2014, we filed a shelf registration statement on Form S-3 (the “Registration Statement”) that was deemed effective on April 17, 2014. This Registration Statement contained two prospectuses: (i) a base prospectus which covers the offering, issuance and sale by the Company of up to \$200,000,000 of its common stock, preferred stock, warrants and/or units; and (ii) a sales agreement prospectus covering the offering, issuance and sale by us of up to a maximum aggregate offering price of \$75,000,000 of its common stock that may be issued and sold under a sales agreement (the “Sales Agreement”) with MLV. During the quarter ended March 31, 2017, the Company issued 1,341,357 shares of common stock for gross proceeds of \$2.0 million. Since inception of this agreement through March 31, 2017, the Company issued 10,472,469 shares of common stock for gross proceeds of \$24.1 million.

Sales of our common stock through MLV, if any, will be made on the NYSE MKT LLC, on any other existing trading market for the common stock or to or through a market maker. Subject to the terms and conditions of the Sales Agreement, MLV will use commercially reasonable efforts to sell our common stock from time to time, based upon our instructions (including any price, time or size limits or other customary parameters or conditions we may impose). We will pay to MLV in cash, upon the sale of common stock pursuant to the Sales Agreement, an amount equal to 3.0% of the gross proceeds from the sale of common stock. We have also provided MLV with customary indemnification rights.

ITEM 4. CONTROLS AND PROCEDURES.

Evaluation of Disclosure Controls and Procedures. Under the supervision and with the participation of our management, including our principal executive officer and principal financial and accounting officer, we conducted an evaluation of the effectiveness, as of March 31, 2017, of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act. Based upon such evaluation, our principal executive officer and principal financial and accounting officer have concluded that, as of March 31, 2017, our disclosure controls and procedures were effective to provide reasonable assurance that the information we are required to disclose in our filings with the Securities and Exchange Commission, or SEC, under the Exchange Act (i) is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and (ii) accumulated and communicated to our management, including our principal executive officer and principal financial and accounting officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control over Financial Reporting. There were no changes in our system of internal controls over financial reporting during the period covered by this report that has materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

None.

ITEM 1A. RISK FACTORS

In analyzing our company, you should consider carefully the following risk factors, together with all of the other information included in Part I, “Item 1A. Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2016. Factors that could cause or contribute to differences in our actual results include those discussed in the following subsection, as well as those discussed above in “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and elsewhere throughout this Quarterly Report on Form 10-Q. Each of the following risk factors, either alone or taken together, could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our Company. The risks and uncertainties described below are not the only ones we face. Additional risks not currently known to us or other factors not perceived by us to present significant risks to our business at this time also may impair our business operations.

Risks Related to Our Business

We have generated no revenue from commercial sales to date and our future profitability is uncertain.

We have a limited operating history and our business is subject to all of the risks inherent in the establishment of a new business enterprise. Our likelihood of success must be considered in light of the problems, expenses, difficulties, complications and delays frequently encountered in connection with this development and expansion. Since we began our business, we have focused on research, development and clinical trials of product candidates, and have incurred losses since inception. As of March 31, 2017, we had an accumulated deficit of approximately \$145 million. If we continue to incur operating losses and fail to become a profitable company, we may be unable to continue our operations. 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, and the extent of our future losses and the timing of our profitability are highly uncertain.

If we fail to obtain the capital necessary to fund our operations, we will be unable to continue or complete our product development and you will likely lose your entire investment.

Although we believe we have enough working capital for operations for the next 12 months, we do not currently have sufficient capital for the completion of development nor commercialization of our product candidates and we will need to continue to seek capital from time to time to continue development of our product candidates and to acquire and develop other product candidates. Our first product candidate is not expected to be commercialized, if approved, until at least 2019 and any partnering revenues that it may generate may not be sufficient to fund our ongoing operations. Our cash balance as of March 31, 2017 was approximately \$17.1 million. Throughout the three months ended March 31, 2017, we raised total net proceeds of approximately \$1.9 million from the sale of our common stock through our ATM million from the completion of public offerings of common stock, warrants and stock option exercises.

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

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

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

The amount of capital we may 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 capital. The capital markets have been unpredictable in the recent past for radio-immunotherapy 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.

If we fail to obtain or maintain necessary FDA approval for our radio-immunotherapy products, or if such approvals are delayed, we will be unable to commercially distribute and market our products.

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

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

Our radio-immunotherapy product candidates are in the early stages of development; and we have not demonstrated that any of our products are safe and effective for any indication.

We currently have only two products in clinical development. In December 2015, the FDA cleared our IND filing for Iomab-B, and we have initiated the pivotal, Phase 3 clinical trial. We are currently conducting a Phase 3, controlled, randomized, pivotal trial. Assuming that the trial meets its end points, it will form the basis for a BLA. Additionally, there are a number of physician IND trials at the FHCRC that have been conducted or are currently ongoing at FHCRC with Iomab-B and the BC8 antibody we licensed. We have completed the Phase 1 portion of the Phase 1/2 multi-center AML trial with fractionated doses of Actimab-A under its own federal IND and have commenced the Phase 2 portion of the trial.

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), 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.

Additionally, changes in regulatory requirements and guidance may occur and we may need to amend clinical trial protocols to reflect these changes. Amendments may require us to resubmit our clinical trial protocols to IRBs for reexamination, which may impact the cost, timing or successful completion of a clinical trial.

In addition, neither we nor any relevant collaborative partner(s) has yet undertaken any clinical assessment or investigation of Company's radio-immunotherapy product candidates for other indications, including colon cancer or prostate cancer. Significant further investment may be required to acquire antibody rights and to undertake necessary research and continued development. Further laboratory and specific clinical testing will be required prior to regulatory approval of any product candidates. Adverse or inconclusive results from pre-clinical testing or clinical trials of product candidates may substantially delay, or halt entirely, any further development of one or more of our products. The projected timetables for continued development of the technologies and related product candidates by us may otherwise be subject to delay or suspension.

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 can be 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 harm our future growth.

There is no guarantee that the FDA will approve BLAs for our product candidates and failure to obtain necessary approvals for our product candidates would adversely affect our ability to grow our business.

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 HSCT. Iomab-B is our product candidate that links Iodine-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 have recently commenced the Phase 2 portion of a multi-center Phase 1/2 clinical trial for our product candidate, Actimab-A, in AML and in the future expect to submit a BLA to the FDA for approval of this product. Actimab-A consists of the anti-CD33 antibody lintuzumab linked with the isotope actinium-225. This product candidate is also the subject of an ongoing human safety trial being conducted under a physician IND at MSKCC. Product candidates utilizing this antibody would require BLA approval before they can be marketed in the United States. We are in the early stages of evaluating other product candidates consisting of conjugates of 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. Indeed, 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 an adverse effect on our ability to expand our business.

Clinical trials necessary to support approval of BLAs for our product candidates will be time consuming and expensive. Delays or failures in our clinical trials may prevent us from commercializing our product candidates and will adversely affect our business, operating results and prospects and could cause us to cease operations.

Initiating and completing clinical trials necessary to support FDA approval of a BLA for Iomab-B, Actimab-A 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 HSCT. This trial is designed to support a BLA filing for marketing approval by the FDA, pending results from the trial. We have also worked with the FDA to develop a clinical trial designed to test the initial safety and efficacy of Actimab-A in newly diagnosed AML patients over the age of 60, and on October 6, 2008, and January 5, 2009, we submitted IND amendments to the FDA for the conduct of a multi-center Phase 1/2 clinical trial for treatment of AML. Subsequent to the completion of the Phase 1 portion of the Phase 1/2 clinical trial we submitted protocol amendments to the FDA in August of 2016, which were agreed upon in September of 2016. The Phase 2 portion of the trial is now underway with the purpose of examining the use of Actimab-A in AML patients who are not eligible for approved forms of treatment with curative intent. The trial is not designed to support marketing approval for the product candidate, and one or more additional trials will have to be conducted in the future before we file a BLA. In addition, there can be no assurance that the data generated during the trial will meet our chosen safety and effectiveness endpoints or otherwise produce results that will eventually support the filing or approval of a BLA. Even if the data from this trial are favorable, these data may not be predictive of the results of any future clinical trials.

The issued patents, which are licensed by us for the HuM195 antibody, our acute myeloid leukemia targeting antibody, may expire before we have commercialized Actimab-A.

The humanized antibody which we use in the conjugated Actimab-A product candidate is covered by the claims of issued patents that we license from Facet Biotech Corporation, a wholly-owned subsidiary of AbbVie Laboratories. After these patents expire, others may be eventually able to use an antibody with the same sequence, and we will then need to rely on additional patent protection covering alpha particle drug products comprising actinium 225. Any competing product based on the HuM195 antibody is likely to require several years of development before achieving our product candidate's current status and may be subject to significant regulatory hurdles, but is nevertheless a possibility that can affect the Company's business in the future.

Additionally, because we expect that certain of these patents will expire prior to commercialization of Actimab-A, we expect that in order to attract a commercialization partner for that product candidate, we may need to reach an agreement with AbbVie to reduce the milestone payments and royalties currently required to be paid under our license agreement for HuM195. There can be no assurance that the parties will be able to agree on an amendment to the terms of the license. Failure to reach such an agreement could materially adversely affect our ability to find a commercialization partner for Actimab-A which may materially harm our business.

Iomab-B is not patent protected.

Neither the antibody portion nor the composition of matter as a whole for the conjugated Iomab product candidate is covered by the claims of any issued or pending patents. Accordingly, there are no patents that would prevent others from using an antibody with the same antibody sequence in any drug product (e.g., those comprising iodine 131 or alpha particle emitters). Any competing product based on the antibody used in Iomab-B is likely to require several years of development before achieving our product candidate's current status and may be subject to significant regulatory hurdles, but is nevertheless a possibility that could negatively impact the Company's business in the future.

We may be unable to obtain a sufficient supply of Ac-225 medical grade isotope in order to continue clinical trials and to allow for the manufacture of commercial quantities of Actimab-A, Actimab-M and any other Ac-225 based drug candidates that we may develop.

There are limited quantities of Ac-225 available today. The existing supplier of Ac-225 to us is the ORNL, which is a science and energy national laboratory in the Department of Energy system. ORNL manufactures Ac-225 by eluting it from its supply of Thorium-229. Although this has proven to be a very reliable source of production for a number of years, it is limited by the quantity of Thorium-229 at ORNL. We believe that the current approximate maximum of Ac-225 production from this source is sufficient for approximately 1,000–2,000 patient treatments per year. Since our needs are significantly below that amount at this time, and will continue to be below that prior to commercializing a product with a potential of selling more than 2,000 patient doses per year. We believe that this supply will be sufficient for completion of clinical trials and early commercialization. To secure supplies beyond this amount, we have developed what we believe to be a scalable cost-effective process for manufacturing Ac-225 in a cyclotron at an estimated cost in excess of \$5 million. This work has been conducted at Technical University Munich (TUM) in Germany. We are now in possession of preparing detailed descriptions of all the developed manufacturing procedures and securing rights to all relevant patent applications and other intellectual property. However, we do not currently have access to a commercial cyclotron capable of producing medical grade Ac-225. Although beam time on such cyclotrons is commercially available, we do not currently have a relationship with any entity that owns or controls a suitable cyclotron. We have identified possible sources and estimate that we could secure the necessary beam time when needed at a cost of approximately \$2 million per year. Our contract for supply of this isotope from ORNL must be renewed yearly, and the current contract extends through the end of 2017. While we expect this contract will be renewed at the end of its term, however, there can be no assurance that ORNL will renew the contract or that the United States Department of Energy will not change its policies that allow for the sale of isotope to us. Failure to acquire sufficient quantities of medical grade Ac-225 would make it impossible to effectively complete clinical trials and to commercialize Actimab-A, Actimab-M and any other Ac-225 based drug candidates that we may develop and would materially harm our business.

Conducting successful clinical studies may require the enrollment of large numbers of patients, and suitable patients may be difficult to identify and recruit.

Patient enrollment in clinical trials and completion of patient participation and follow-up depends on many factors, including the size of the patient population; the nature of the trial protocol; the availability of approved effective treatments for the relevant disease; competition from other clinical trial programs for similar indications; the attractiveness of, or the discomforts and risks associated with, the treatments received by enrolled subjects; the availability of appropriate clinical trial investigators; support staff; and proximity of patients to clinical sites and ability to comply with the eligibility and exclusion criteria for participation in the clinical trial and patient compliance. For example, patients may be discouraged from enrolling in our clinical trials if the trial protocol requires them to undergo extensive post-treatment procedures or follow-up to assess the safety and effectiveness of our product candidates or if they determine that the treatments received under the trial protocols are not attractive or involve unacceptable risks or discomforts. Patients may also not participate in our clinical trials if they choose to participate in contemporaneous clinical trials of competitive product candidates. In addition, patients participating in refractory AML clinical trials are seriously and often terminally ill and therefore may not complete the clinical trial due to reasons including comorbid conditions or occurrence of adverse medical events related or unrelated to the investigational products, or death.

Development of sufficient and appropriate clinical protocols to demonstrate safety and efficacy are required and we may not adequately develop such protocols to support approval.

The FDA may require us to submit data on a greater number of patients than we originally anticipated and/or for a longer follow-up period or change the data collection requirements or data analysis applicable to our clinical trials. It may also require additional data on certain categories of patients, should it emerge during the conduct of our clinical trials that certain categories of patients are likely to be affected in different and/or additional manners than the rest of the patient population. In addition to FDA requirements, our clinical trials require the approval of the IRB at each site selected. We have submitted our clinical trial protocol for our current Actimab-A clinical trial to the IRBs at participating sites for approval and we have thus far obtained approval from ten IRBs. Our clinical trial protocols have not been rejected by any IRB to date.

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, causing us to incur additional costs and delay our receipt of any revenue from potential product sales.

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.

Serious injury or death resulting from a failure of one of our product candidates during current or future clinical trials could also result in the FDA delaying our clinical trials or denying or delaying approval of a product candidate.

The Phase 1 portion of the ongoing Phase 1/2 clinical trial for Actimab-A being conducted at seven clinical centers in the United States (MSKCC, MD Anderson Cancer Center, Fred Hutchinson Cancer Research Center, Johns Hopkins Medicine, University of Pennsylvania Health System, Baylor Summons Cancer Center and Columbia University Medical Center) was designed to establish the maximum tolerated dose of the product. As the Company expected, patients receiving highest dose of the drug administered in the trial had prolonged bone marrow suppression which could lead to fatal infections and other severe consequences. Consequently, the dose levels of our drug in that trial were reduced as we continue our work on establishing maximum tolerated dose.

Even though an adverse event may not be the result of our product candidate, the FDA or an IRB could delay or halt a clinical trial for an indefinite period of time while an adverse event is reviewed, and likely would do so in the event of multiple such events.

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.

If the third parties on which we rely to conduct our clinical trials and to assist us with pre-clinical development do not perform as contractually required or expected, or fail to comply with applicable regulations and standards, 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.

To date, we believe our consultants, contract research organizations and other similar entities with which we are working have performed well; however, if these third parties 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. Accordingly, we may be delayed in obtaining regulatory approvals for our product candidates and may be delayed in our efforts to successfully develop 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 ongoing clinical, nonclinical and preclinical programs. If these third parties do not successfully carry out their contractual duties or regulatory obligations or meet expected deadlines, if these third parties need to be replaced, 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 may be adversely affected. Furthermore, our third-party clinical trial investigators may be delayed in conducting our clinical trials for reasons outside of their control.

The future results of our current or future clinical trials may not support our product candidate claims or may result in the discovery of unexpected adverse side effects.

Even if our clinical trials are completed as planned, we cannot be certain that their results will support our product candidate claims or that the FDA or foreign authorities will agree with our conclusions regarding them. Success in pre-clinical studies and early clinical trials does not ensure that later clinical trials will be successful, and we cannot be sure that the later trials will replicate the results of prior trials and pre-clinical studies. The clinical trial process may fail to demonstrate that our product candidates are safe and effective for the proposed indicated uses. If FDA concludes that the clinical trials for Iomab-B, Actimab-A, 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. In addition, our clinical trials for Actimab-A involve a relatively small patient population. Because of the small sample size, their results may not be indicative of future results.

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

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

Iomab-B, Actimab-A and future product candidates may never achieve market acceptance.

Iomab-B, Actimab-A and future product candidates that we may develop or gain market acceptance among physicians, patients and the medical community. The degree of market acceptance of any of product 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.

Failure of Iomab-B, Actimab-A 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.

To be commercially successful, physicians must be persuaded that using our product candidates for treatment of AML and other cancers, if approved for those indications, are effective alternatives to existing therapies and treatments.

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.

Both before and after marketing approval, our product candidates are subject to ongoing regulatory requirements and continued regulatory review, and if we fail to comply with these continuing regulatory requirements, we could be subject to a variety of sanctions and the sale of any approved products could be suspended.

Both before and after regulatory approval to market a particular product candidate, the manufacturing, labeling, packaging, adverse event reporting, storage, advertising, promotion, distribution and record keeping related to the product are subject to extensive, ongoing regulatory requirements enforced by FDA and other similar regulatory bodies. Additionally, because our product candidates include radio-active isotopes, they will be subject to additional regulation and oversight from the United States Nuclear Regulatory Commission (NRC) and similar bodies in other jurisdictions. The FDA regulatory requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMP requirements and GCP requirements for any clinical trials that we conduct post-approval. Any regulatory approvals that we receive for our product candidates may also be subject to limitations on the approved indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase IV clinical trials, and surveillance to monitor the safety and efficacy of the product candidate. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with the regulatory requirements of the FDA and other applicable U.S. and foreign regulatory authorities could subject us to administrative or judicially imposed sanctions, including:

- restrictions on the marketing of our products or their manufacturing processes;
- warning letters;
- civil or criminal penalties;
- fines;
- injunctions;
- product seizures or detentions;
- import or export bans;
- voluntary or mandatory product recalls and related publicity requirements;
- suspension or withdrawal of regulatory approvals;
- total or partial suspension of production; and
- refusal to approve pending applications for marketing approval of new products or supplements to approved applications.

The FDA's policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. 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, which would adversely affect our business, prospects and ability to achieve or sustain profitability.

Even if regulatory approval of a product candidate is granted, such approval may be subject to limitations on the intended uses for which a product may be marketed and reduce the potential to successfully commercialize that product and generate revenue from that product. If the FDA determines that the product promotional materials, labeling, training or other marketing or educational activities constitute promotion of an unapproved use, it could request that we or our commercialization partners cease or modify our training or promotional materials or subject us to regulatory enforcement actions. It is also possible that other federal, state or foreign enforcement authorities might take action if they consider such training or other promotional materials to constitute promotion of an unapproved use, which could result in significant fines or penalties under other statutory authorities, such as laws prohibiting false claims for reimbursement.

Our revenue stream will depend upon third party coverage and reimbursement 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 become subject to litigation brought by third-party service providers, consultants or former employees.

In our normal course of business, we may enter into contracts with third-party service providers, consultants, contract research organizations, contract sales organizations, commercial partners, universities, governmental agencies, not-for-profit organizations, and employees. If we fail to satisfy the terms of these contracts or the party to the contract believes we violated or failed to satisfy the terms of an agreement, litigation or other dispute resolution proceedings may be initiated against us.

The outcomes of litigation or other dispute resolutions initiated against us are uncertain. Litigation or other proceedings may consume a substantial portion of our financial resources and the efforts of our personnel. The party that initiates litigation against us may be able to sustain the costs of such litigation more effectively than we can because of their substantially greater financial and personnel resources. Litigation may also absorb significant time of management leading to an adverse effect on company performance.

We have no manufacturing capacity and 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 lack experience in drug manufacturing, and we lack the resources and the capabilities to manufacture any of our product candidates on a clinical or commercial scale. As a result, we rely on third-party manufacturers to supply, store, and distribute pre-clinical and clinical supply of our product candidates, and plan to continue to do so for the foreseeable future. Any performance failure on the part of our existing or future manufacturers could delay clinical development or regulatory approval of our product candidates or commercialization of any approved products, producing additional losses and depriving us of potential product revenue. We are currently manufacturing the antibody HuM195, which is a component of our Actimab-A and Actimab-M drug candidates that are currently in a Phase 2 and Phase 1 clinical trial, respectively. At this time, we are undertaking release testing of a new batch of HuM195 antibody. If we are unable to successfully release the manufactured batch of the HuM195 antibody in a timely fashion we may encounter delays in our clinical trials. Inability to secure continued clinical supply of HuM195 antibody may impact our competitive position with these drug candidates as manufacturing another batch would require additional resources and time.

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

Furthermore, these third party contractors, whether foreign or domestic, may experience regulatory compliance difficulty, mechanical shut downs, employee strikes, or any other unforeseeable acts that may delay or limit production, which could leave our commercial partners with inadequate supplies of product to sell, especially when regulatory requirements or customer demand necessitate the need for additional product supplies. Our inability to adequately establish, supervise and conduct (either ourselves or through third parties) all aspects of the formulation and manufacturing processes, and the inability of third party manufacturers to consistently supply quality product when required would have a material adverse effect on our ability to commercialize and sell 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, which may result in claims by or against us or our partners for breach of contract.

If a contract manufacturer cannot perform as agreed, we may be required to replace it. We may incur added costs and delays in identifying and qualifying replacements because the FDA must approve any replacement manufacturer prior to manufacturing our product candidates. Such approval would require new testing and compliance inspections. In addition, a new manufacturer would have to be

educated in, or develop substantially equivalent processes for, production of our product candidates after receipt of FDA approval.

We anticipate continued reliance on third parties for manufacturing and marketing, if we are successful in obtaining marketing approval from the FDA and other regulatory agencies for any of our product candidates. If we are not able to secure favorable arrangements with such third parties, our business and financial condition would be harmed, and our commercialization of any of our product candidates may be halted, delayed or made less profitable if those third parties fail to obtain such approvals, fail to provide us with sufficient quantities of product or fail to do so at acceptable quality levels or prices.

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 also intend to partner with larger pharmaceutical companies for the commercialization of any of our product candidates that are approved. In connection with our efforts to commercialize our product candidates, we will seek to secure favorable arrangements with third parties to distribute, promote, market and sell them. If we are not able to secure favorable commercial terms or arrangements with third parties for distribution, marketing, promotion and sales of our product candidates, we may have to retain promotional and marketing rights and seek to develop the commercial resources necessary to promote or co-promote or co-market certain or all of our product candidates to the appropriate channels of distribution in order to reach the specific medical market that we are targeting. We may not be able to enter into any partnering arrangements on this or any other basis. If we are not able to secure favorable partnering arrangements, or are unable to develop the appropriate resources necessary for the commercialization of our product candidates, our business and financial condition could be harmed. In addition, we will have to hire additional employees or consultants, since our current employees have limited experience in these areas. Sufficient employees with relevant skills may not be available to us. Any increase in the number of our employees would increase our expense level, and could have an adverse effect on our financial position.

In addition, we, or our potential commercial partners, may not successfully introduce our product candidates or they may not achieve acceptance by patients, health care providers and insurance companies. Further, it is possible that we may not be able to secure arrangements to manufacture, market, distribute, promote and sell our product candidates at favorable commercial terms that would permit us to make a profit. To the extent that corporate partners conduct clinical trials, we may not be able to control the design and conduct of these clinical trials.

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

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

Upon commercialization of our product candidates, we may be dependent on third parties to market, distribute and sell them.

Our ability to generate revenues may be dependent upon the sales and marketing efforts of any future co-marketing partners and third-party distributors. At this time, we have not entered into an agreement with any commercialization partner and only plan to do so after the successful completion of Phase 2 clinical trials and prior to commercialization. If we fail to reach an agreement with any commercialization partner, or if upon reaching such an agreement that partner fails to sell a large volume of our products, it may have a negative impact on our business, financial condition and results of operations.

Our product candidates will face significant competition in the markets for them, and if they are unable to compete successfully, our business will suffer.

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

If side effects are identified during the time our product candidates are in development or after they are approved and on the market, we may choose to or be required to perform lengthy additional clinical trials, discontinue development of the affected product candidate, change the labeling of any such products, or withdraw or recall any such products from the market, any of which would hinder or preclude our ability to generate revenues.

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.

Our business depends upon securing and protecting critical intellectual property.

Our commercial success will depend in part on our obtaining and maintaining patent, trade secret, 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. We will only be able to protect our technologies from unauthorized use by third parties to the extent that valid and enforceable intellectual property protection, such as patents or trade secrets law, cover them. In particular, we place considerable emphasis on obtaining patent and trade secret protection for significant new technologies, products and processes. Furthermore, the degree of future protection of our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage. Moreover, 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 involves 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 foreign 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 may not be successful in hiring and retaining key employees.

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 or her employment with us, such a departure may 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 work force 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.

Healthcare legislative reform measures may have a material adverse effect on our business and results of operations.

In March 2010, former President Obama signed the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (collectively, "PPACA"), which makes changes that are expected to significantly impact the pharmaceutical industries. One of the principal aims of the PPACA as currently enacted is to expand health insurance coverage to approximately 32 million Americans who are currently uninsured. The consequences of this significant coverage expansion on the sales of our products, once they are developed, are unknown and speculative.

The PPACA contains a number of provisions designed to generate the revenues necessary to fund the coverage expansions among other things. This includes fees and taxes on manufacturers of certain branded prescription drugs, an abbreviated pathway for approval of biosimilar products, a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, increases in the minimum Medicaid rebates owed by manufacturers under the Medicaid Drug Rebate Program and an extension of the rebate program to individuals enrolled in Medicaid managed care organizations, and a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D.

The PPACA provisions on comparative clinical effectiveness research extend the initiatives of the American Recovery and Reinvestment Act of 2009, also known as the stimulus package, which included \$1.1 billion in funding to study the comparative effectiveness of health care treatments and strategies. This stimulus funding was designated for, among other things, conducting, supporting or synthesizing research that compares and evaluates the risks and benefits, clinical outcomes, effectiveness and appropriateness of products. The PPACA appropriates additional funding to comparative clinical effectiveness research. Although Congress has indicated that this funding is intended to improve the quality of health care, it remains unclear how the research will impact current Medicare coverage and reimbursement or how new information will influence other third-party payor policies. There is a risk that President Donald Trump's administration could repeal or amend the PPACA, and it is uncertain what the effect of such repeal or amendments would have on our business, financial condition and results of operations.

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. On August 2, 2011, former President Obama signed into law the Budget Control Act of 2011, which, among other things, creates the Joint Select Committee on Deficit Reduction to recommend proposals in spending reductions to Congress. The Joint Select Committee did not achieve a targeted deficit reduction of at least \$1.2 trillion for the years 2013 through 2021, which threatened to trigger the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers of 2% per fiscal year, which went into effect in April 2013 and will stay in effect through 2024 unless additional Congressional action is taken. On January 2, 2013, Congress passed and former President Obama signed the American Taxpayer Relief Act of 2012 which, among other things, further reduced Medicare payments to certain providers, including physicians, hospitals and cancer treatment centers. We expect that the PPACA, as well as other federal or state health care reform measures that may be adopted in the future, could have a material adverse effect on our industry generally and our ability to successfully commercialize our products or could limit or eliminate our spending on certain development projects. The taxes imposed by the PPACA and the expansion in the government's role in the U.S. healthcare industry may result in decreased profits to us, lower reimbursement by payors for our products, and/or reduced medical procedure volumes, all of which may adversely affect our business, financial condition and results of operations.

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 believe we have sufficient cash on hand to finance research and development and to cover our ongoing working capital needs for the next 12 months. We have financed our operations primarily through sales of stock and the issuance of convertible promissory notes. It is likely that during the next twelve months we will seek to raise additional capital through the sales of stock and/or issuance of convertible debentures 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 private placement offering could result in dilution to the 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 vendor. In order to do so, or to finance the cost of our other activities, we may issue additional equity securities that could dilute our stockholders' stock ownership. We may also assume additional debt and incur impairment losses related to goodwill and other tangible assets if we acquire another company and this could negatively impact our earnings and results of operations.

Our Common Stock has been considered a Penny Stock.

During the fiscal year 2013 and through the first quarter of 2017 our common stock has or had been a penny stock, therefore, when our stock is considered a penny stock trading in our securities may be subject to penny stock considerations. Broker-dealer practices in connection with transactions in “penny stocks” are regulated by certain penny stock rules adopted by the SEC.

Penny stocks generally are equity securities with a price of less than \$5.00 (other than securities registered on certain national securities exchanges or quoted on the NYSE MKT system). Penny stock rules require a broker-dealer, prior to a transaction in a penny stock not otherwise exempt from the rules, to deliver a standardized risk disclosure document that provides information about penny stocks and the risks in the penny stock market. The broker-dealer also must provide the customer with current bid and offer quotations for the penny stock, the compensation of the broker-dealer and its salesperson in the transaction, and monthly account statements showing the market value of each penny stock held in the customer’s account. The broker-dealer must also make a special written determination that the penny stock is a suitable investment for the purchaser and receive the purchaser’s written agreement to the transaction. These requirements may have the effect of reducing the level of trading activity, if any, in the secondary market for a security that becomes subject to the penny stock rules. The additional burdens imposed upon broker-dealers by such requirements may discourage broker-dealers from effecting transactions in our securities, which could severely limit their market price and liquidity of our securities. These requirements may restrict the ability of broker-dealers to sell our common stock and may affect your ability to resell our common stock.

Our Common Stock is subject to price volatility unrelated to our operations.

The trading volume of our common stock has been and may continue to be extremely limited and sporadic. As a result of such trading activity, the quoted price for our common stock on the NYSE MKT may not necessarily be a reliable indicator of its fair market value.

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 the Company’s competitors or the Company itself. 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.

Because we do not intend to pay dividends, stockholders will benefit from an investment in our Common Stock only if it appreciates in value.

We have never declared or paid any cash dividends on our Preferred Stock or 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 Preferred Stock or Common Stock. As a result, the success of an investment in our Preferred Stock or Common Stock will depend upon any future appreciation in its value. There is no guarantee that our Preferred Stock or 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 the 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 SEC 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 to the registration of resale of the Common Stock.

Applicable regulatory requirements, including those contained in and issued under the Sarbanes-Oxley Act, may make it difficult for us to retain or attract qualified officers and directors, which could adversely affect the management of its business and its ability to obtain or retain listing of our Common Stock.

We may be unable to attract and retain those qualified officers, directors and members of board committees required to provide for effective management because of the rules and regulations that govern publicly held companies, including, but not limited to, certifications required by principal executive officers. The enactment of the Sarbanes-Oxley Act has resulted in the issuance of a series of related rules and regulations and the strengthening of existing rules and regulations by the SEC, as well as the adoption of new and more stringent rules by the stock exchanges. The perceived increased personal risk associated with these changes may deter qualified individuals from accepting roles as directors and executive officers.

Further, some of these changes heighten the requirements for board or committee membership, particularly with respect to an individual's independence from the corporation and level of experience in finance and accounting matters. We may have difficulty attracting and retaining directors with the requisite qualifications. If we are unable to attract and retain qualified officers and directors, the management of our business and our ability to obtain or retain listing of our shares of Common Stock on any stock exchange (assuming we elect to seek and are successful in obtaining such listing) could be adversely affected.

If we fail to maintain an effective system of internal controls, we may not be able to accurately report our financial results or detect fraud. Investors could lose confidence in our financial reporting and this may decrease the trading price of our Common Stock.

We must maintain effective internal controls to provide reliable financial reports and detect fraud. We have previously identified material weaknesses in our internal control over financial reporting because we did not have sufficient written policies and procedures for accounting and financial reporting and we did not have effective controls over period end financial disclosures and reporting processes. During 2014, our management remediated these previously identified material weaknesses. In future periods, we may identify additional deficiencies in our system of internal controls over financial reporting that may require remediation. There can be no assurances that any such future deficiencies identified may not be material weaknesses that would be required to be reported in future periods. Failure to maintain an effective system of internal controls could harm our operating results and cause investors to lose confidence in our reported financial information. Any such loss of confidence would have a negative effect on the trading price of our Common Stock.

The price of our common stock may become volatile, which could lead to losses by investors and costly securities litigation.

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 Company resources, which could harm our business and financial condition.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES.

None

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION.

Item 5.02 Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

Appointment of Officers

On May 15, 2017, the Company named Sandesh Seth as its Principal Executive Officer and Steve O'Loughlin as its Principal Financial and Accounting Officer. Mr. Seth currently serves as our Executive Chairman and Mr. O'Loughlin currently serves as our Vice President, Finance and Corporate Development.

Biographies of Mr. Seth and Mr. O'Loughlin.

Sandesh Seth, MS, age 52, has been our Director since March 2012, our Chairman of the Board since October 2013, and Executive Chairman since August 2014. Mr. Seth was affiliated with Laidlaw & Co. (UK) Ltd., a healthcare focused, investment banking and wealth management firm where he was Head of Healthcare Investment Banking. Mr. Seth is the Chairman of the Board of Relmada Therapeutics, Inc., a publicly listed, specialty pharmaceuticals company focused on pain therapeutics.

Mr. Seth has 20+ years of experience in investment banking (Cowen & Co.), equity research (Bear Stearns, Commonwealth Associates) and in the pharma industry (Pfizer, Warner-Lambert, SmithKline in strategic planning, business development and R&D project management). Mr. Seth has an MBA in Finance from New York University; an M.S. in the Pharmaceutical Sciences from the University of Oklahoma Health Center and a B.Sc. in Chemistry from Bombay University. He has published several scientific articles and was awarded the University Regents Award for Research Excellence at the University of Oklahoma. Mr. Seth was designated as Regulatory Affairs Certified (R.A.C.) by the Regulatory Affairs Professionals Society which signifies proficiency with U.S. FDA regulations.

That Mr. Seth has served in various business executive-level positions over the course of his career, has significant investment banking experience, has developed significant management and leadership skills and is well accustomed to interfacing with investors, analysts, auditors, C-level executives, and outside advisors, led us to conclude that Mr. Seth should serve as a director.

Steve O'Loughlin, age 32, Mr. O'Loughlin joined Actinium in October 2015 as Vice President, Finance and Corporate Development, with almost a decade of life sciences industry experience gained from previous positions in investment banking and publicly traded life sciences companies. Prior to Actinium, from June 2015 to October 2015, Mr. O'Loughlin worked at J. Streicher LLC as an investment banker, from August 2012 to June 2015 Mr. O'Loughlin held the position of Vice President, Corporate Finance and Development and was a corporate officer at Protea Biosciences, Inc., a publicly traded life sciences tools company. Previously, From June 2010 to June 2012, Mr. O'Loughlin held corporate development positions with Caliber I.D., a publicly traded diagnostics company. Mr. O'Loughlin previously worked in investment banking at Jesup & Lamont where he focused on the biotechnology and life sciences industries. Mr. O'Loughlin has a B.S. in Business Administration with a concentration in finance from Ramapo College of New Jersey.

Family Relationships

There are no family relationships between our directors and officers.

Transactions with Related Persons

There are no related party transactions with Mr. Seth other than his Consulting Agreement with the Company, as described below. The Company does not have any related party transactions with Mr. O'Loughlin.

Compensatory Plan with Mr. Seth

In a Consulting Agreement Amended and Restated on August 6, 2015, as amended, our Chairman of the Board entered into an agreement (the "Agreement") with the Company to serve as Executive Chairman of the Company. The Executive Chairman is currently paid an annual consulting fee of \$495,000. During the term of this agreement, the annual consulting fee shall be maintained at least at the same amount as the annual compensation of the Chief Executive Officer of the Company. The Executive Chairman is also entitled to participate in a Company bonus program, which shall be established by the Board pursuant to which the Board shall award bonuses to the consultant, based upon the achievement of written individual and corporate objectives such as the Board shall determine. During the term of the agreement, the performance cash bonus shall be at least at the same amount as the performance cash bonus and other compensation paid to the Chief Executive Officer of the Company. On September 23, 2014, the Board also granted to the Executive Chairman an option to purchase 280,000 common shares of the Company at an exercise price of \$6.13 per share. The options vest at the rate of 2% of the grant each month from the grant Date until fully vested in accordance with the provisions of the Company's Amended and Restated 2013 Stock Plan. The Executive Chairman shall also be awarded stock option and/or restricted stock grants at least at the same amount as such stock option and/or restricted stock that is granted to the Chief Executive Officer of the Company. Mr. Seth's agreement includes severance benefits, including in the event of a change of control of the Company, and to provide for immediate vesting of options in accordance with the Company's amended Stock Plan and Equity Plan. The term of the agreement is until February 21, 2021.

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

- (i) a single lump sum payment equal to twenty-four (24) months of Mr. Seth's compensation (at the rate in effect as of the date of termination);
- (ii) continued health benefits for the 24-month period beginning on the date of termination; and
- (iii) All outstanding equity awards granted to Mr. Seth under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination and the performance goals with respect to such outstanding performance awards, if any, will deemed satisfied at "target".

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

- (i) a single lump sum payment equal to thirty (30) months of Mr. Seth's compensation (at the rate in effect as of the date of termination);
- (ii) continued health benefits for the 30-month period beginning on the date of termination; and
- (iii) All outstanding equity awards granted to Mr. Seth under the Company's equity compensation plans shall become immediately vested and exercisable (as applicable) as of the date of such termination and the performance goals with respect to such outstanding performance awards, if any, will deemed satisfied at "target".

The foregoing description of the Agreement is not complete and is qualified in its entirety by reference to the full text of such agreement, a copy of which is incorporated herein by reference to Exhibit 10.1 of this Form 10-Q.

Compensatory Plan with Mr. O'Loughlin

On September 17, 2015, the Company and Mr. O'Loughlin entered into an employment agreement (the "Employment Agreement") to employ Mr. O'Loughlin as the Company's Senior Director of Finance and Corporate Development. Mr. O'Loughlin's employment with the Company is on an "at will" basis, meaning that either Mr. O'Loughlin or the Company may terminate his employment at any time for any reason or no reason, without further obligation or liability, except as provided in his Employment Agreement.

Salary

- Mr. O'Loughlin's current annual base salary is \$210,000.

Bonus

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

Options

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

Non-Solicitation

- Mr. O’Loughlin agreed that during the term of his employment with the Company, and for a period of 24 months following the cessation of employment with the Company for any reason or no reason, he shall not directly or indirectly solicit, induce, recruit or encourage any of the Company’s employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for yourself or any other person or entity. For a period of 24 months following cessation of employment with the Company for any reason or no reason, he shall not attempt to negatively influence any of the Company’s clients or customers from purchasing Company products or services or to solicit or influence or attempt to influence any client, customer or other person either directly or indirectly, to direct his or its purchase of products and/or services to any person, firm, corporation, institution or other entity in competition with the business of the Company.

A copy of the Employment Agreement is filed herewith as Exhibit 10.2 and is incorporated herein by reference. The above description is only a summary of the terms of Employment Agreement and does not purport to be complete description of such document, and are qualified in their entirety by reference to the Employment Agreement, a copy of which is attached as an exhibit hereto and which are incorporated by reference in this Item 5.02.

Mr. O’Loughlin also entered into an Indemnity Agreement (the “Indemnity Agreement”) with the Company, whereby the Company agreed to indemnify him in certain situations in connection with his role as an officer of the Company.

The foregoing summary does not purport to be complete and is qualified in its entirety by reference to the Indemnity Agreement, which is filed as Exhibit 10.3 to this Quarterly Report on Form 10-Q.

ITEM 6. EXHIBITS

Copies of the following documents are included as exhibits to this report pursuant to Item 601 of Regulation S-K.

<u>Exhibit No.</u>	<u>Title of Document</u>	<u>Location</u>
10.1	<u>Amended and Restated Consulting Agreement, dated August 6, 2015, by and between Actinium Pharmaceuticals, Inc. and Sandesh Seth (incorporated by reference to Exhibit 10.4 to Form 10-Q filed on August 7, 2015).</u>	
10.2	<u>Employment Agreement, dated September 17, 2015, by and between Actinium Pharmaceuticals, Inc. and Steve O’Loughlin.</u>	Attached
10.3	<u>Indemnity Agreement, dated May 15, 2017, by and between Actinium Pharmaceuticals, Inc. and Steve O’Loughlin.</u>	Attached
31.1	<u>Certification of the Principal Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</u>	Attached
31.2	<u>Certification of the Principal Financial and Accounting Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</u>	Attached
32.1	<u>Certification of the Principal Executive Officer pursuant to U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*</u>	Attached
32.2	<u>Certification of the Principal Financial and Accounting Officer pursuant to U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*</u>	Attached
101.INS	XBRL Instance Document	Attached
101.SCH	XBRL Taxonomy Extension Schema Document	Attached
101.CAL	XBRL Taxonomy Calculation Linkbase Document	Attached
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	Attached
101.LAB	XBRL Taxonomy Label Linkbase Document	Attached
101.PRE	XBRL Taxonomy Presentation Linkbase Document	Attached

* The Exhibit attached to this Form 10-Q shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934 (the “Exchange Act”) or otherwise subject to liability under that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or the Exchange Act, except as expressly set forth by specific reference in such filing.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ACTINIUM PHARMACEUTICALS, INC.

Date: May 15, 2017

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

By: /s/ Steve O'Loughlin
Steve O'Loughlin
Vice President, Finance and
Corporate Development
(Duly Authorized Officer and Principal Financial
and Accounting Officer)



Actinium Pharmaceuticals, Inc.

September 17, 2015

Steve O'Loughlin
3312 Hudson Avenue Apartment 8E
Union City, NJ 07087

Dear Mr. O'Loughlin,

On behalf of Actinium Pharmaceuticals, Inc. (the "Company"), I am pleased to offer you the position of Senior Director of Finance and Corporate Development. Speaking for myself, as well as the other members of the Company's Board of Directors (the "Board"), we are all very impressed with your credentials and look forward to your future success in this position.

1. Position. The terms of your new position with the Company are as set forth below:

(a) You shall serve as Senior Director of Finance and Corporate Development.

You shall report to the Executive Chairman or designee and shall perform your duties for the Company at the Company's offices except for travel that may be necessary or appropriate in connection with the performance of your duties hereunder.

(b) You agree to devote your best efforts and substantially all of your business time to advance the interests of the Company and to discharge adequately your duties hereunder. You may perform certain consulting projects that do not interfere with your Company duties and maintain whatever licenses required for performance of such consulting activities. Consulting activities must be non-competitive with the Company's plans, disclosed and approved on a case by case basis by your direct supervisor or an authorized Company representative.

2. Start Date. Subject to fulfillment of any conditions imposed by this letter agreement, you will commence this new position with the Company no later than October 1, 2015 ("Start Date"). The Company has the right to withdraw this Offer if you are unable to fulfill the Start Date requirement.

3. Proof of Right to Work. For purposes of federal immigration law, you will be required to provide to the Company documentary evidence of your identity and eligibility for employment in the United States. Such documentation must be provided to us within three (3) business days of your date of hire, or our employment relationship with you may be terminated.

4. Compensation.

(a) Base Salary. You will be paid an annual base salary of One Hundred Seventy Five Thousand dollars (\$175,000), which will be paid in accordance with the Company's regular payroll practices.

(b) Performance Bonus. You shall be entitled to participate in an executive bonus program, which shall be established by the Board pursuant to which the Board may award bonuses of up to 20% to you, based upon the achievement of written individual and corporate objectives such as the Board shall determine.

(c) Stock Option Grant. The Board has agreed to grant you an option grant to purchase 100,000 common shares of the Company (the "Grant") and is subject to approval by the Compensation Committee.

(i) Stock Options. Such options will have an exercise price equal to the closing price of the Company's common stock on your first day of employment (the "Grant Date").

(ii) Vesting Schedule. Twenty-eight percent (28%) of the initial options or restricted stock granted shall vest twelve months after the date of grant and two percent (2%) of the remainder shall vest each month thereafter until fully vested. Such additional options or restricted stock will have an exercise price per share which is equal to fair market value as determined by the Board on the date of the grant. Two percent (2%) of such additional options or stock shall vest each month thereafter until fully vested. The term of all options granted under this Agreement will be for 10 years from the date of grant, subject to your continuing service with the Company. The options or restricted stock will be incentive stock options or stock to the maximum extent allowed by the tax code and will be subject to the terms of the Company's Amended and Restated 2014 Stock Plan and the Stock Option Agreement between you and the Company.

5. Benefits.

a . Benefit plan – Health Insurance, Retirement and Stock Option Plan. The Company will provide you with the opportunity to participate in the standard benefits plans currently available to other similarly situated employees. The Company reserves the right to cancel and/or change the benefits plans it offers to its employees at any time, subject to applicable law.

b . Vacation; Sick Leave. You will be entitled to 15 days paid vacation per year, pro-rated for the remainder of this calendar year. Vacation may not be taken before it is accrued. You will be entitled to 5 days paid sick leave per year pro-rated.

c . Other Benefits. The Company will provide you with standard business reimbursements (including mileage, supplies, long distance calls), subject to Company policies and procedures and with appropriate receipts. In addition, you will receive any other statutory benefits required by law.

d . Reimbursement of Expenses. You shall be reimbursed for all normal items of travel and entertainment and miscellaneous expenses reasonably incurred by you on behalf of the Company provided such expenses are documented and submitted in accordance with the reimbursement policies in effect from time to time.

6. Confidential Information and Invention Assignment Agreement. Your acceptance of this offer and commencement of employment with the Company is contingent upon the execution, and delivery to an officer of the Company, of the Company's Confidential Information and Invention Assignment Agreement, a copy of which is enclosed for your review and execution (the "Confidentiality Agreement"), prior to or on your Start Date.

7. At-Will Employment. Your employment with the Company will be on an "at will" basis, meaning that either you or the Company may terminate your employment at any time for any reason or no reason, without further obligation or liability.

8. Non-Solicitation. You agree that during the term of your employment with the Company, and for a period of 24 months following the cessation of employment with the Company for any reason or no reason, you shall not directly or indirectly solicit, induce, recruit or encourage any of the Company's employees or consultants to terminate their relationship with the Company, or attempt any of the foregoing, either for yourself or any other person or entity. For a period of 24 months following cessation of employment with the Company for any reason or no reason, you shall not attempt to negatively influence any of the Company's clients or customers from purchasing Company products or services or to solicit or influence or attempt to influence any client, customer or other person either directly or indirectly, to direct his or its purchase of products and/or services to any person, firm, corporation, institution or other entity in competition with the business of the Company.

9. Arbitration. Any dispute or claim arising out of or in connection with your employment with the Company (except with regard to enforcement of the Confidentiality Agreement) will be finally settled by arbitration in New York, New York in accordance with the Commercial Arbitration Rules of the American Arbitration Association by one arbitrator appointed in accordance with said rules. Judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The parties agree that this Agreement evidences a transaction involving interstate commerce and that the operation, interpretation and enforcement of this arbitration provision, the procedures to be used in conducting an arbitration pursuant to this arbitration provision, and the confirmation of any award issued to either party by reason of such arbitration, is governed exclusively by the Federal Arbitration Act, 9 U.S.C. § 21 et seq. Notwithstanding the foregoing, the parties may apply to any court of competent jurisdiction for preliminary or interim equitable relief, or to compel arbitration in accordance with this paragraph, without breach of this arbitration provision.

10. Miscellaneous. This Agreement, together with the Confidentiality Agreement, sets forth the terms of your employment with the Company and supersedes any prior representations or agreements, whether written or oral. This Agreement may not be modified or amended except by a written agreement, signed by the Company and by you. Whenever possible, each provision of this Agreement will be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be invalid, illegal or unenforceable in any respect under any applicable law or rule in any jurisdiction, such invalidity, illegality or unenforceability will be lessened or reduced to the extent possible or will be severed and will not affect any other provision and this Agreement will be reformed, construed and enforced in such jurisdiction as if such invalid, illegal or unenforceable provision had never been contained herein. This Agreement will be governed by New York law without reference to rules of conflicts of law. All notices, requests, demands and other communications called for hereunder shall be in writing and shall be deemed given (i) on the date of delivery if delivered personally, (ii) one (1) day after being sent by a well established commercial overnight service, (iii) three (3) days after being mailed by registered or certified mail, return receipt requested, prepaid and addressed to the parties or their successors at the following addresses, or at such other addresses as the parties may later designate in writing, (iv) upon confirmation of facsimile transfer, if sent by facsimile or (v) upon confirmation of delivery when directed to the electronic mail address set forth below, if sent by electronic mail:

If to the Company: 757 Third Avenue, 21st floor
New York, NY 10017

If to you: Steve O'Loughlin
3312 Hudson Avenue Apartment 8E
Union City, NJ 07087

We are all delighted to be able to extend you this offer and look forward to working with you. To indicate your acceptance of the Company's offer, please sign and date this letter in the space provided below and return it to me, along with a signed and dated copy of the Confidentiality Agreement.

(signature page follows)

Very truly yours,

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Sandesh Seth

Title: Executive Chairman

ACCEPTED AND AGREED:

STEVE O'LOUGHLIN

/s/ Steve O'loughlin
Signature

INDEMNIFICATION AGREEMENT

THIS INDEMNIFICATION AGREEMENT (this "Agreement") is made and entered into this 15th day of May, 2017, by and between Actinium Pharmaceuticals, Inc., a Delaware corporation (the "Corporation"), and Steve O'Loughlin ("Indemnitee").

RECITALS

WHEREAS, the Corporation, which is organized under the General Corporation Law of the State of Delaware (as amended, the "DGCL"), wishes to enter into this Agreement to set forth certain rights and obligations of the Indemnitee and the Corporation with respect to the Indemnitee's service as an officer of the Corporation;

WHEREAS, it is essential to the Corporation that it be able to retain and attract as directors and officers the most capable persons available;

WHEREAS, increased corporate litigation has subjected directors and officers to litigation risks and expenses, and the limitations on the availability of directors and officers liability insurance have made it difficult for the Corporation to attract and retain such persons;

WHEREAS, the Board of Directors of the Corporation (the "Board") has determined that the difficulty in attracting and retaining such persons is detrimental to the best interests of the Corporation's stockholders and that the Corporation should contractually obligate itself to indemnify, and to advance expenses on behalf of, such persons to the fullest extent permitted by applicable law so that they will serve the Corporation free from undue concern that they will not be so indemnified;

WHEREAS, Indemnitee performs a valuable service to the Corporation in Indemnitee's capacity as an officer of the Corporation;

WHEREAS, the Corporation's Amended and Restated Bylaws (the "Bylaws") include provisions providing for the indemnification of the directors and officers of the Corporation, including persons serving at the request of the Corporation in such capacities with other corporations or enterprises, as authorized by the DGCL;

WHEREAS, the Corporation's Certificate of Incorporation (the "Charter"), the Bylaws and the DGCL, by their nonexclusive nature, permit contracts between the Corporation and its directors and officers with respect to indemnification of such persons;

WHEREAS, in recognition of Indemnitee's need for (a) substantial protection against personal liability as a condition to Indemnitee's service to the Corporation in Indemnitee's capacity as an officer of the Corporation in addition to Indemnitee's reliance on the Bylaws, which Indemnitee believes is inadequate in the present circumstances, and (b) specific contractual assurance of Indemnitee's rights to full indemnification against risks and expenses (regardless of, among other things, any amendment to or revocation of the Charter and/or the Bylaws, any change in the composition of the Corporation's Board, or a change in control of the Corporation);

WHEREAS, the Corporation intends that this Agreement provide Indemnitee with greater protection than that which is provided by the Bylaws; and

WHEREAS, in order to induce Indemnitee to serve as an officer of the Corporation, the Corporation has determined and agreed to enter into this Agreement with Indemnitee.

NOW, THEREFORE, in consideration of Indemnitee's service as an officer of the Corporation following the date hereof, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Corporation and Indemnitee hereby agree as follows:

1 . Indemnity of Indemnitee. The Corporation agrees to hold harmless and indemnify Indemnitee to the fullest extent authorized or permitted by law, the provisions of the Charter, and the Bylaws, as the same may be amended from time to time (but, only to the extent that such amendment permits the Corporation to provide broader indemnification rights than such law, the Charter, or the Bylaws permitted prior to adoption of such amendment). For purposes of this Agreement, the meaning of the phrase "to the fullest extent authorized or permitted by law" shall include, but not be limited to: (i) to the fullest extent authorized or permitted by the provision of the DGCL that authorizes or contemplates additional indemnification by agreement, or the corresponding provision of any amendment to or replacement of the DGCL or such provision thereof; and (ii) to the fullest extent authorized or permitted by any amendments to or replacements of the DGCL adopted after the date of this Agreement that increase the extent to which a corporation may indemnify its directors and officers.

2. Additional Indemnity. In addition to and not in limitation of the indemnification otherwise provided for herein, and subject only to the exclusions set forth in Section 3 hereof, the Corporation further agrees to hold harmless and indemnify Indemnitee:

(a) against any and all (i) expenses (including attorneys' fees), retainers, court costs, transcript costs, fees of experts, witness fees, travel expenses, duplicating costs, printing and binding costs, telephone charges, postage, delivery service fees and all other disbursements or expenses of the types customarily incurred in connection with prosecuting, defending, preparing to prosecute or defend, investigating, participating, or being or preparing to be a witness in any threatened, pending or completed action, suit, arbitration, alternate dispute resolution mechanism, investigation, inquiry, administrative hearing or any other actual, threatened or completed proceeding, including any appeal thereof or related thereto (each, a "Proceeding"), or responding to, or objecting to, a request to provide discovery in any Proceeding, (ii) damages, judgments, fines and amounts paid in settlement and any other amounts that Indemnitee becomes legally obligated to pay (including any federal, state or local taxes imposed on Indemnitee as a result of receipt of reimbursements or advances of expenses under this Agreement) and (iii) the premium, security for, and other costs relating to any costs bond, supersedes bond, or other appeal bond or its equivalent, whether civil, criminal, arbitrational, administrative or investigative with respect to any Proceeding (items under clauses, (i), (ii) and (iii), collectively, the "Expenses") actually and reasonably incurred by Indemnitee, or on Indemnitee's behalf, because of any claim or claims made against or by him in connection with any Proceeding, whether formal or informal (including an action by or in the right of the Corporation), to which Indemnitee is, was or at any time becomes a party or a witness, or is threatened to be made a party to, a participant in or a witness with respect to, by reason of the fact that Indemnitee is, was or at any time becomes a director or officer of the Corporation, or is or was serving or at any time serves at the request of the Corporation as a director or officer of another corporation, partnership, joint venture, trust or other enterprise ("Corporate Status");

(b) against any and all Expenses actually and reasonably incurred by Indemnitee, or on Indemnitee's behalf, if Indemnitee is, or is threatened to be made, a party to or a participant in any Proceeding by or in the right of the Corporation to procure a judgment in its favor;

(c) against any and all Expenses actually and reasonably incurred by Indemnitee, or on Indemnitee's behalf, if Indemnitee is, by reason of his or her Corporate Status, a witness in any Proceeding to which Indemnitee is not a party and is not threatened to be made a party; and

(d) otherwise to the fullest extent as may be provided to Indemnitee by the Corporation under the non-exclusivity provisions of the DGCL, the Charter and the Bylaws.

3. Limitations on Additional Indemnity. No indemnity pursuant to Section 2 hereof shall be paid by the Corporation:

(a) on account of any claim or Proceeding against Indemnitee for an accounting of profits made from the purchase or sale by Indemnitee of securities of the Corporation pursuant to the provisions of Section 16(b) of the Securities Exchange Act of 1934, as heretofore or hereafter amended (the "Exchange Act"), or similar provisions of any federal, state or local law if the final, non-appealable judgment of a court of competent jurisdiction finds Indemnitee to be liable for disgorgement under Section 16(b) of the Exchange Act;

(b) on account of Indemnitee's conduct that is established by a final, non-appealable judgment of a court of competent jurisdiction as knowingly fraudulent or deliberately dishonest or that constituted willful misconduct;

(c) for which payment is actually made to Indemnitee under (i) a valid and collectible insurance policy, including under any policy of insurance purchased and maintained on Indemnitee's behalf by the Corporation or (ii) under a valid and enforceable indemnity clause, bylaw, or agreement, including, but not limited to, an indemnity clause, bylaw, or agreement relating to another corporation, partnership, joint venture, trust, or other enterprise for which Indemnitee is or was serving as a director or officer at the request of the Corporation; *provided, that* indemnity pursuant to Section 2 hereof shall be paid by the Corporation in respect of any excess beyond payment actually received by Indemnitee under such insurance policy, clause, bylaw or agreement;

(d) if and to the extent indemnification is contrary to law, either as a matter of public policy, or under the provisions of the Federal Securities Act of 1933, as amended, the Securities Exchange Act of 1934, as amended, the DGCL, or any other applicable law; or

(e) in connection with any Proceeding (or part thereof) initiated by Indemnitee, against the Corporation or its directors, officers, employees or other agents, unless (i) such indemnification is expressly required to be made by law, (ii) the Corporation has joined in the Proceeding (or relevant part thereof), (iii) the Board has consented to the initiation of such Proceeding, (iv) such indemnification is provided by the Corporation, in its sole discretion, pursuant to the powers vested in the Corporation under the DGCL, or (v) the Proceeding (or relevant part thereof) is initiated pursuant to Section 12 hereof.

4 . Continuation of Indemnity. All agreements and obligations of the Corporation contained herein shall continue during the period Indemnitee is a director or officer of the Corporation (or is or was serving at the request of the Corporation as a director or officer of another corporation, partnership, joint venture, trust or other enterprise) and shall continue thereafter so long as Indemnitee shall be subject to any possible claim or threatened, pending or completed Proceeding, whether civil, criminal, arbitrational, administrative or investigative, including any appeal thereof or relating thereto, in respect of which Indemnitee is granted rights of indemnification or advancement of Expenses hereunder, in each case, by reason of the fact of the Indemnitee's Corporate Status.

5 . Partial Indemnification. Indemnitee shall be entitled under this Agreement to indemnification by the Corporation for a portion of the Expenses, judgments, fines and amounts paid in settlement and any other amounts that Indemnitee becomes legally obligated to pay in connection with any Proceeding referred to in Section 2 hereof even if not entitled hereunder to indemnification for the total amount thereof, and the Corporation shall indemnify Indemnitee for the portion thereof to which Indemnitee is entitled.

6 . Notification and Defense of Claim. To obtain indemnification under this Agreement, Indemnitee shall submit to the Corporation a written request therefor. As soon as practicable, and in any event, not later than thirty (30) days after Indemnitee becomes aware, by written or other overt communication, of any pending or threatened litigation, claim or assessment, Indemnitee will, if a claim for indemnification in respect thereof is to be made against the Corporation under this Agreement, notify the Corporation of such pending or threatened litigation, claim or assessment; but the omission so to notify the Corporation will not relieve the Corporation from any liability which it may have to Indemnitee otherwise under this Agreement, and any delay in so notifying the Corporation shall not constitute a waiver by Indemnitee of any of Indemnitee's rights under this Agreement. With respect to any such pending or threatened litigation, claim or assessment as to which Indemnitee notifies the Corporation of the commencement thereof:

(a) the Corporation will be entitled to participate therein at its own expense;

(b) except as otherwise provided below, the Corporation may, at its option and jointly with any other indemnifying party similarly notified and electing to assume such defense, assume the defense thereof, with counsel reasonably satisfactory to Indemnitee. After notice from the Corporation to Indemnitee of its election to assume the defense thereof, the Corporation will not be liable to Indemnitee under this Agreement for any legal or other expenses subsequently incurred by Indemnitee in connection with the defense thereof except for reasonable costs of investigation or otherwise as provided below. Indemnitee shall have the right to employ separate counsel in such Proceeding but the fees and expenses of such counsel incurred after notice from the Corporation of its assumption of the defense thereof shall be at the expense of Indemnitee unless (i) the employment of counsel by Indemnitee has been authorized by the Corporation, (ii) Indemnitee shall have reasonably concluded, and so notified the Corporation, that there may be a conflict of interest between the Corporation and Indemnitee in the conduct of the defense of such action, or (iii) the Corporation shall not in fact have employed counsel to assume the defense of Indemnitee in connection with such action; in any of such cases the fees and expenses of Indemnitee's separate counsel shall be at the expense of the Corporation. The Corporation shall not be entitled to assume the defense of any Proceeding brought by or on behalf of the Corporation or as to which Indemnitee shall have made the conclusion provided for in clause (ii) above; and

(c) the Corporation shall not be liable to indemnify Indemnitee under this Agreement for any amounts paid in settlement of any action or claim effected without the Corporation's written consent, which consent shall not be unreasonably withheld, conditioned or delayed. The Corporation shall not enter into any settlement in connection with a Proceeding in any manner which would impose any Expenses, penalties (whether civil or criminal) or limitations on Indemnitee without Indemnitee's written consent, which may be given or withheld in Indemnitee's sole and reasonable discretion.

7 . Expenses. The Corporation shall advance, to the extent not prohibited by law, all Expenses actually and reasonably incurred by Indemnitee in connection with any Proceeding promptly following request therefor, but in any event no later than twenty (20) days after the receipt by the Corporation of a written statement or statements requesting such advances (which shall include invoices received by Indemnitee in connection with such Expenses but, in the case of invoices in connection with legal services, any references to legal work performed or to expenditure made that would cause Indemnitee to waive any privilege accorded by applicable law shall not be included with the invoice) from time to time, whether prior to or after the final disposition of any Proceeding. The right to advancement described in this Section 7 is vested. Advances shall be unsecured and interest free. Advances shall be made without regard to Indemnitee's ability to repay the expenses and without regard to Indemnitee's ultimate entitlement to indemnification under the other provisions of this Agreement. The execution and delivery to the Corporation of this Agreement shall constitute an undertaking by Indemnitee to the fullest extent required by law to repay all advances if and to the extent that it is ultimately determined by a court of competent jurisdiction in a final, non-appealable judgment that Indemnitee is not entitled to be indemnified by the Corporation, and Indemnitee shall qualify for advances immediately upon such execution and delivery. The right to advances under this Section 7 shall in all events continue until final disposition of any Proceeding, including any appeal therein.

8. Contribution.

(a) Whether or not the indemnification provided in Section 2 is available, in respect of any Proceeding in which the Corporation is jointly liable with Indemnitee (or would be if joined in such Proceeding), the Corporation shall pay, in the first instance, the entire amount of any judgment or settlement of such Proceeding without requiring Indemnitee to contribute to such payment and the Corporation hereby waives and relinquishes any right of contribution it may have against Indemnitee. The Corporation shall not enter into any settlement of any Proceeding in which the Corporation is jointly liable with Indemnitee (or would be if joined in such Proceeding) unless such settlement provides for a full and final release of all claims asserted against Indemnitee.

(b) Without diminishing or impairing the obligations of the Corporation set forth in Section 8(a), if, for any reason, Indemnitee shall elect or be required to pay all or any portion of any judgment or settlement in any threatened, pending or completed Proceeding in which the Corporation is jointly liable with Indemnitee (or would be if joined in such Proceeding), the Corporation shall contribute to the amount of Expenses, judgments, fines and amounts paid in settlement actually and reasonably incurred and paid or payable by Indemnitee in proportion to the relative benefits received by the Corporation and all officers, directors or employees of the Corporation, other than Indemnitee, who are jointly liable with Indemnitee (or would be if joined in such Proceeding), on the one hand, and Indemnitee, on the other hand, from the transaction from which such Proceeding arose; *provided, however*, that the proportion determined on the basis of relative benefit may, to the extent necessary to conform to law, be further adjusted by reference to the relative fault of the Corporation and all officers, directors or employees of the Corporation other than Indemnitee who are jointly liable with Indemnitee (or would be if joined in such Proceeding), on the one hand, and Indemnitee, on the other hand, in connection with the events that resulted in such expenses, judgments, fines or settlement amounts, as well as any other equitable considerations which the law may require to be considered. The relative fault of the Corporation and all officers, directors or employees of the Corporation, other than Indemnitee, who are jointly liable with Indemnitee (or would be if joined in such Proceeding), on the one hand, and Indemnitee, on the other hand, shall be determined by reference to, among other things, the degree to which their actions were motivated by intent to gain personal profit or advantage, the degree to which their liability is primary or secondary and the degree to which their conduct is active or passive.

(c) The Corporation hereby agrees to fully indemnify and hold Indemnitee harmless from any claims of contribution which may be brought by officers, directors or employees of the Corporation, other than Indemnitee, who may be jointly liable with Indemnitee.

(d) To the fullest extent permissible under applicable law, if the indemnification provided for in this Agreement is unavailable to Indemnitee for any reason whatsoever, the Corporation, in lieu of indemnifying Indemnitee, shall contribute to the amount actually and reasonably incurred by Indemnitee, whether for judgments, fines, penalties, excise taxes, amounts paid or to be paid in settlement and/or for Expenses, in connection with any claim relating to an indemnifiable event under this Agreement, in such proportion as is deemed fair and reasonable in light of all of the circumstances of such Proceeding in order to reflect (i) the relative benefits received by the Corporation and Indemnitee as a result of the event(s) and/or transaction(s) giving cause to such Proceeding; and/or (ii) the relative fault of the Corporation (and its directors, officers, employees and agents) and Indemnitee in connection with such event(s) and/or transaction(s).

9. Presumptions and Effect of Certain Proceedings.

(a) In making a determination with respect to Indemnitee's entitlement to indemnification hereunder, the person, persons or entity making such determination shall, to the fullest extent not prohibited by law, presume that Indemnitee is entitled to indemnification under this Agreement if Indemnitee has submitted a request for indemnification in accordance with Section 6 hereof. If the Corporation contests any claim or assertion that Indemnitee is entitled to indemnification hereunder, the Corporation shall, to the fullest extent not prohibited by law, have the burden of proof to overcome such presumption in connection with the making by such person, persons, or entity of any determination with respect to Indemnitee's entitlement to indemnification.

(b) Without limiting the foregoing, if any Proceeding is disposed of on the merits or otherwise (including a disposition without prejudice), without (i) the final disposition being adverse to Indemnitee, (ii) a final adjudication by a court of competent jurisdiction that Indemnitee was liable to the Corporation, (iii) a plea of guilty (iv) a final adjudication by a court of competent jurisdiction that Indemnitee did not act in good faith, and in a manner Indemnitee reasonably believed to be in or not opposed to the best interests of the Corporation, or (v) with respect to any criminal proceeding, a final adjudication by a court of competent jurisdiction that Indemnitee had reasonable cause to believe Indemnitee's conduct was unlawful, Indemnitee shall be considered for the purposes hereof to have been wholly successful with respect thereto.

(c) The termination of any Proceeding or of any claim, issue or matter therein, by judgment, order, settlement or conviction, or upon a plea of nolo contendere or its equivalent, shall not (except as otherwise expressly provided in this Agreement) of itself adversely affect the right of Indemnitee to indemnification or create a presumption that Indemnitee did not act in good faith and in a manner which he or she reasonably believed to be in or not opposed to the best interests of the Corporation or, with respect to any criminal Proceeding, that Indemnitee had reasonable cause to believe that such Indemnitee's conduct was unlawful.

(d) For purposes of any determination of good faith, Indemnitee shall be deemed to have acted in good faith to the extent Indemnitee relied in good faith on (i) the records or books of account of the Corporation, including financial statements , (ii) information supplied to Indemnitee by the officers of the Corporation in the course of their duties, (iii) the advice of legal counsel for the Corporation or its Board or counsel selected by any committee of the Board or (iv) information or records given or reports made to the Corporation by an independent certified public accountant, an appraiser, investment banker or other expert selected with reasonable care by the Corporation or its Board or any committee of the Board.

10. Information Sharing. To the extent that the Corporation receives a request or requests from a governmental third party or other licensing or regulating organization (the "Requesting Agency"), whether formal or informal, to produce documentation or other information concerning an investigation, whether formal or informal, being conducted by the Requesting Agency, and such investigation is reasonably likely to include review of any actions or failures to act by Indemnitee, the Corporation shall promptly give notice to Indemnitee of said request or requests and any subsequent request. In addition, the Corporation shall provide Indemnitee with a copy of any and all information or documentation that the Corporation shall provide to the Requesting Agency.

11. No Imputation. The knowledge and/or actions, or failure to act, of any director, officer, agent or employee of the Corporation or the Corporation itself shall not be imputed to Indemnitee for purposes of determining any rights under this Agreement.

12. Enforcement.

(a) Any right to indemnification or advances granted by this Agreement to Indemnitee shall be enforceable by or on behalf of Indemnitee in any court of competent jurisdiction if (i) the claim for indemnification or advances is denied, in whole or in part, (ii) no disposition of such claim is made within ninety (90) days of request therefor; (iii) advancement of Expenses is not timely made pursuant to Section 7, (iv) payment of indemnification pursuant to this Agreement is not made within ten (10) days after a determination has been made that Indemnitee is entitled to indemnification, or (v) the Corporation or any other person or entity takes or threatens to take any action to declare this Agreement void or unenforceable, or institutes any litigation or other action or proceeding designed to deny, or to recover from, Indemnitee the benefits provided or intended to be provided to Indemnitee hereunder, Indemnitee shall be entitled to an adjudication by the Delaware Court of Chancery of Indemnitee's entitlement to such indemnification or advancement of Expenses, and the Corporation shall not oppose Indemnitee's right to seek any such adjudication in accordance with this Agreement. Indemnitee, in such enforcement action, if successful in whole or in part, shall be entitled to be paid also the Expenses of prosecuting Indemnitee's claim. It shall be a defense to any action for which a claim for indemnification is made under Section 2 hereof (other than an action brought to enforce a claim for advance or reimbursement of Expenses under this Agreement, *provided* that the required undertaking has been tendered to the Corporation) that Indemnitee is not entitled to indemnification because of the limitations set forth in Section 3 hereof. Neither the failure of the Corporation (including the Board, any committee of the Board, or the Corporation's its stockholders, or any subgroup of such directors or stockholders) to have made a determination prior to the commencement of such enforcement action that indemnification of Indemnitee is proper in the circumstances, nor an actual determination by the Corporation (including the Board, any committee of the Board, or the Corporation's stockholders, or any subgroup of such directors or stockholders) that such indemnification is improper shall be a defense to the action or create a presumption that Indemnitee is not entitled to indemnification under this Agreement or otherwise.

(b) To the fullest extent not prohibited by law, the Corporation shall be precluded from asserting in any judicial proceeding commenced pursuant to this Section 12 that the procedures and presumptions of this Agreement are not valid, binding and enforceable and shall stipulate in any such court that the Corporation is bound by all the provisions of this Agreement. If a determination shall have been made pursuant to this Agreement that Indemnitee is entitled to indemnification, the Corporation shall be bound by such determination in any Proceeding commenced pursuant to this Section 12, absent (i) a misstatement by Indemnitee of a material fact, or an omission of a material fact necessary to make Indemnitee's statements not materially misleading, in connection with the request for indemnification, or (ii) a prohibition of such indemnification under applicable law.

13. Subrogation. In the event of payment under this Agreement, the Corporation shall be subrogated to the extent of such payment to all of the rights of recovery of Indemnitee, who shall execute all documents required and shall do all acts that may be necessary to secure such rights and to enable the Corporation effectively to bring suit to enforce such rights.

14. Non-Exclusivity of Rights. The rights conferred on Indemnitee by this Agreement shall not be exclusive of any other right which Indemnitee may have or hereafter acquire under any statute, provision of the Charter or Bylaws, agreement, vote of stockholders or directors, or otherwise, both as to action in Indemnitee's official capacity and as to action in another capacity while holding office. To the extent that a change in applicable law, whether by statute or judicial decision, permits greater indemnification or advancement of Expenses than would be afforded currently under the Charter or Bylaws and this Agreement, it is the intent of the parties hereto that Indemnitee shall enjoy by this Agreement the greater benefits so afforded by such change, subject to the restrictions expressly set forth herein or therein. Except as expressly set forth herein, no right or remedy herein conferred is intended to be exclusive of any other right or remedy, and every other right and remedy shall be cumulative and in addition to every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. Except as expressly set forth herein, the assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other right or remedy.

15. Insurance. To the extent that the Corporation maintains an insurance policy or policies providing liability insurance for directors, trustees, general partners, managing members, officers, employees, agents or fiduciaries of the Corporation, Indemnitee shall be covered by such policy or policies (including with respect to prior service) to the same extent as the most favorably-insured persons under such policy or policies in a comparable position.

16. Enforcement; Survival of Rights.

(a) The Corporation expressly confirms and agrees that the Corporation has entered into this Agreement and assumed the obligations imposed on it hereby in order to induce Indemnitee to serve as a director of the Corporation, and the Corporation acknowledges that Indemnitee is relying upon this Agreement in serving the Corporation in such capacity.

(b) The rights conferred on Indemnitee by this Agreement shall continue after Indemnitee has ceased to be a director or officer of the Corporation or to serve at the request of the Corporation as a director or officer agent of another corporation, partnership, joint venture, trust or other enterprise, and shall inure to the benefit of Indemnitee's heirs, executors and administrators.

(c) The Corporation shall require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business or assets of the Corporation, expressly to assume and agree to perform this Agreement in the same manner and to the same extent that the Corporation would be required to perform if no such succession had taken place.

(d) The Corporation and Indemnitee agree herein that a monetary remedy for breach of this Agreement, at some later date, may be inadequate, impracticable and difficult of proof, and further agree that such breach may cause Indemnitee and the Corporation irreparable harm. Accordingly, the parties hereto agree that each of the Corporation and the Indemnitee may enforce this Agreement by seeking injunctive relief and/or specific performance hereof, without any necessity of showing actual damage or irreparable harm and that by seeking injunctive relief and/or specific performance, they shall not be precluded from seeking or obtaining any other relief to which they may be entitled. The Corporation and Indemnitee further agree that they shall be entitled to such specific performance and injunctive relief, including temporary restraining orders, preliminary injunctions and permanent injunctions, without the necessity of posting bonds or other undertaking in connection therewith. The Corporation and Indemnitee acknowledge that in the absence of a waiver, a bond or undertaking may be required by the Delaware Court of Chancery, and they hereby waive any such requirement of such a bond or undertaking.

17. No Conflicts. To the extent that any provision of this Agreement conflicts with the Charter, the Bylaws, or applicable law, the Charter, the Bylaws, or such applicable law (as applicable) shall govern.

18. Separability. Each of the provisions of this Agreement is a separate and distinct agreement and independent of the others, so that if any provision hereof shall be held to be invalid, illegal or unenforceable for any reason, (i) such invalidity, illegality or unenforceability shall not affect the validity, legality or enforceability of the remaining provisions of this Agreement (including without limitation, each portion of any Section of this Agreement containing any such provision held to be invalid, illegal or unenforceable, that is not itself invalid, illegal or unenforceable) and such other provisions shall remain enforceable to the fullest extent permitted by law; (ii) such provision or provisions shall be deemed reformed to the extent necessary to conform to applicable law and to give the maximum effect to the intent of the parties hereto; and (iii) to the fullest extent possible, the provisions of this Agreement (including, without limitation, each portion of any section of this Agreement containing any such provision held to be invalid, illegal or unenforceable, that is not itself invalid, illegal or unenforceable) shall be construed so as to give effect to the intent manifested thereby. Furthermore, if this Agreement shall be invalidated in its entirety on any ground, then the Corporation shall nevertheless indemnify Indemnitee to the fullest extent provided by the Charter (if applicable), the Bylaws, the DGCL or any other applicable law.

19. Governing Law. This Agreement shall be governed by, and construed and enforced in accordance with, the laws of the State of Delaware, without regard to its principles of conflicts of laws. The Corporation and Indemnitee hereby irrevocably and unconditionally (i) agree that any action or proceeding arising out of or in connection with this Agreement may be brought in the Delaware Court of Chancery, (ii) consent to submit to the jurisdiction of the Delaware Court of Chancery for purposes of any action or proceeding arising out of or in connection with this Agreement, (iii) waive any objection to the laying of venue of any such action or proceeding in the Delaware Court of Chancery, and (iv) waive, and agree not to plead or to make, any claim that any such action or proceeding brought in the Delaware Court of Chancery has been brought in an improper or inconvenient forum.

20. Amendment and Termination. No amendment, modification, termination or cancellation of this Agreement shall be effective unless in writing signed by both parties hereto.

21. Identical Counterparts. This Agreement may be executed in one or more counterparts, each of which shall for all purposes be deemed to be an original but all of which together shall constitute but one and the same Agreement. Only one such counterpart need be produced to evidence the existence of this Agreement.

22. Notices. All notices, requests, demands and other communications hereunder shall be in writing and shall be deemed to have been duly given (i) upon delivery if delivered by hand to the party to whom such communication was directed or (ii) upon the third business day after the date on which such communication was mailed if mailed by certified or registered mail with postage prepaid:

- (a) If to Indemnitee, at the address indicated on the signature page hereof.
- (b) If to the Corporation, to:

Actinium Pharmaceuticals, Inc.
275 Madison Avenue, 7th Floor
New York, NY 10016
Attention: Executive Chairman

or to such other address as may have been furnished to Indemnitee by the Corporation.

22. Headings. The headings of the sections of this Agreement are inserted for convenience only and shall not be deemed to constitute part of this Agreement or to affect the construction hereof.

[Remainder of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties hereto have executed this Indemnification Agreement on and as of the day and year first above written.

COMPANY:

ACTINIUM PHARMACEUTICALS, INC.

By: /s/ Sandesh Seth

Name: Sandesh Seth

Title: Executive Chairman

INDEMNITEE:

/s/ Steve O'Loughlin

Steve O'Loughlin

Address for notices:

3312 Hudson Avenue Apartment 8E

Union City, NJ 07087

Signature Page to Indemnification Agreement

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002**

I, Sandesh Seth, certify that:

1. I have reviewed this Form 10-Q of Actinium Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods present in this report;
4. I am responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13-a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principals;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financing reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involved management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 15, 2017

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

**CERTIFICATION OF PRINCIPAL FINANCIAL AND ACCOUNTING OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002**

I, Steve O'Loughlin, certify that:

1. I have reviewed this Form 10-Q of Actinium Pharmaceuticals, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods present in this report;
4. I am responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13-a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principals;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financing reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involved management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 15, 2017

By: /s/ Steve O'Loughlin
Steve O'Loughlin
Vice President, Finance and
Corporate Development
(Duly Authorized Officer and Principal Financial
and Accounting Officer)

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of Actinium Pharmaceuticals, Inc. (the "Company") on Form 10-Q for the period ended March 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Sandesh Seth, Executive Chairman of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
2. The information contained in the Quarterly Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

Date: May 15, 2017

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

**CERTIFICATION OF PRINCIPAL FINANCIAL AND ACCOUNTING OFFICER
PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of Actinium Pharmaceuticals, Inc. (the "Company") on Form 10-Q for the period ended March 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Steve O'Loughlin, Vice President, Finance and Corporate Development of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
2. The information contained in the Quarterly Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

Date: May 15, 2017

By: /s/ Steve O'Loughlin
Steve O'Loughlin
Vice President, Finance and
Corporate Development
(Duly Authorized Officer and Principal Financial
and Accounting Officer)